

DIPTERA FROM NEPAL

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ANTHOMYIIDAE

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## ANTHOMYIIDAE

By D. M. ACKLAND

### SYNOPSIS

The Anthomyiidae collected on the 1954 and 1961-62 British Museum (N.H.) Expeditions, by Mr. J. B. Tyson in 1953, and by Prof. H. Janetschek in 1961 are systematically treated. Eleven new species are described, including one new species from Tadzhikistan, one new combination is created, and the relationship between them is discussed.

### INTRODUCTION

THIS paper is based on material collected on four expeditions to Nepal: by Mr. R. L. Coe, entomologist on the 1961-62 British Museum (Natural History) Expedition to Eastern Nepal; Mr. J. Quinlan on the 1954 Expedition; Mr. J. B. Tyson in 1953; and Prof. H. Janetschek in 1961, this latter material being in the Deutsches Entomologisches Institut, Berlin. One new species from Tadzhikistan is also described in this paper.

My thanks are due to the following, who have generously given me advice and help, and loaned material: Prof. W. Hennig of the Staatliches Museum für Naturkunde, Stuttgart; Dr. P. Freeman, Mr. R. L. Coe and Mr. A. C. Pont of the British Museum (Natural History), London; Dr. G. Morge of the Deutsches Entomologisches Institut, Berlin; and Mr. H. Andersson of the Zoological Institute, Lund.

The Anthomyiidae have in the past generally been considered as a subfamily within the Muscidae. They are here treated as a separate family, in line with the work of Hockett (1965*b*) and Hennig (1966). No attempt is made to divide the Anthomyiidae into subfamilies. Previously accepted sub-groupings (i.e. Fucelliinae to include *Myopina* Robineau-Desvoidy, 1830) have been shown (Herting, 1957: 434; Hennig, 1966: 25) to be heterogeneous.

On the other hand, most of the generic and subgeneric groupings of recent European and American authors have been accepted as genera. The exact status of these supra-specific groups is still in dispute. For the correct assignment of species to genera, an examination of the male genitalia is essential. The common possession of a non-genitalic character (e.g. an anteroventral seta on the mid tibia) within a limited fauna, in a group of species which on other grounds is clearly monophyletic, has often led to that character being accepted as a "generic" character; the absence of it in a species from a different fauna (which on other grounds is clearly related) has sometimes delayed the recognition of their close relationship. As examples of characters which have often in the past been considered as of generic

value, but which can be shown to be either present or absent in undoubted closely related species, the following can be mentioned: a projecting epistome, an anteroventral seta on the mid tibia, the costa with hairs on the ventral surface, an apical posteroventral seta on hind tibia, and hairy eyes.

The generic key given in this paper is therefore designed mainly to deal with the species included in the paper, and will not necessarily work with material from another area. Where the characters specifically apply to species which are the only known representative of the genus in Nepal, I have keyed out to the species.

The following measurements are used: the width of the parafacials is measured at about the level of the middle of the third antennal segment, and is the real width, with the angle of vision at right angles to the plane of the parafacial, not the apparent width with the head viewed in profile; the width of the third antennal segment is the greatest width; the lengths of the second and third antennal segments are measured with the head viewed from in front; the width of the gena is the narrowest width.

The following characters are considered to be present normally in the Anthomyiidae, if not stated to be otherwise: two presutural and three postsutural pairs of dorsocentral setae, propleural depression, prosternum, pteropleuron and hypo-pleuron completely bare, sixth abdominal tergite hidden and without setae, anal vein reaching wing margin, even if only faintly.

No species of Anthomyiidae appear to have been recorded from Nepal. In the present paper eleven new species are described, and five previously described species are recorded. Altogether eleven genera (including two genera represented by females only, and not determined to species) are now known to occur in Nepal. All the material is in the British Museum (Natural History), London, unless otherwise stated.

The terminology of the genitalia follows Hennig and van Emden (*in* Tuxen, 1956). All the drawings of genitalia have been made from macerated abdomina. The setae on the epandrium have not been drawn. The structures of the aedeagus are labelled in some of the figures as follows: ph = phallapodeme, h = hypandrium, pl = processus longus, e = epiphallus, d = distiphallus, po = postgonite, pr = praegonite.

#### KEY TO GENERA OF ANTHOMYIIDAE S. STR. KNOWN FROM NEPAL (MALES)

- |   |  |                                 |
|---|--|---------------------------------|
| 1 | Frons wide, at least as wide as eye width . . . . .  | <b>PSEUDOMYOPINA</b> (p. 133)   |
| - | Frons narrower, at most as wide as ocellar tubercle . . . . .  | 2                               |
| 2 | Sternopleural setae 2 + 2; costa on ventral surface with fine setulae or hairs; costal spine distinct and strong, at least 0.75 times length of <i>r-m</i> ; prostigmatal setae with only a few (1-3) associated hairs; mesopleuron with a developed upper anterior setula . . . . .   | 3                               |
| - | Sternopleural setae 1 + 2 or 1 + 1; costa on ventral surface bare, at least beyond apex of subcostal vein; costal spine absent or generally very small; prostigmatal setae generally with more (4-9) associated hairs ( <i>Delia flavibasis</i> with stronger costal spine and 1-2 prostigmatal hairs, but then <i>pra</i> seta absent); mesopleuron generally without a developed upper anterior setula . . . . . | 4                               |
| 3 | Arista with long rays, total width of plumosity at least as wide as width of third antennal segment; hind tibia with about 3-4 <i>ad</i> and 2 <i>pd</i> setae   | <b>HYLEMYA</b> s. str. (p. 120) |

- Arista only long pubescent, longest hairs not more than twice width of basal diameter of arista ; hind tibia with about 5 *ad* and 3 *pd* setae ; tergite 7 + 8 shining black . . . . . **CRASPEDOCHOETA** (p. 110)
- 4 Prosternum with lateral setulae ; hypopleuron with fine hairs posterior to spiracle . . . . . **CALYTHEA** (p. 109)
- Prosternum bare ; hypopleuron bare . . . . . 5
- 5 Pteropleuron with 1-3 setae on upper margin, below wing base . . . . . **EMMESOMYIA** (p. 120)
- Pteropleuron without setae on upper margin . . . . . 6
- 6 Mid tibia with an *av* seta at apical third ; epistome projecting ; hind tibia with 2 *ad* and 2 *pd* setae . . . . . 7
- Mid tibia without an *av* seta ; epistome not so strongly projecting (in *Delia nepalensis* somewhat projecting, but then *pra* seta absent) ; hind tibia generally with at least 3 *ad* setae . . . . . 8
- 7 Blackish species ; face below lunule with a swelling (surstyli forked at apex) . . . . . **Nupedia aestiva** (Mg.) (p. 132)
- Yellowish grey pollinose species ; second antennal segment with some small tubercles on anterior surface (surstyli simple, slender) . . . . . **Paregle cinerella** (Fall.) (p. 125)
- 8 Hind tibia with 13-15 unequal *ad* setae, which in basal half are not strictly uniserial, and with numerous erect fine setulae on *p* and *pv* surfaces ; eyes with short and rather sparse but distinct hairs ; abdomen with dense, short setae on margins of tergite 5 ; about 3 longer posthumeral setae . . . . . **Lasiomma eriophthalmum** (Zett.) (p. 124)
- Hind tibia with at most 9 *ad* setae ; eyes bare or with only microscopic hairs, only visible under high magnification . . . . . 9
- 9 *pra* seta about 1.25 times length of posterior notopleural seta ; ratio of distance between *prst dc* rows and *prst acr* rows about 4 : 1 : 4 ; head in profile with pronotum rather projecting in front of level of epistome ; postabdomen strongly swollen in profile . . . . . **PHORBIA** (p. 129)
- *pra* seta at most as long as posterior notopleural seta, or absent ; ratio of *prst acr* and *prst dc* rows between 2 : 1 : 2 and 1 : 1 : 1 ; postabdomen not strongly swollen in profile . . . . . 10
- 10 Mid tibia with 2 *pd* setae (in unique holotype of *Pegohylemyia nupera* this character not ascertainable, but 2 *pd* are probably present) ; genitalia with praegonites reduced, small and more or less fused to hypandrium, but with distinct setae, distiphallus small and largely membranous . . . . . **PEGOHYLEMYIA** (p. 126)
- Mid tibia with only 1 *pd* seta, or *pd* absent ; genitalia with praegonites more developed, generally with short, fine setae, weakly joined to hypandrium ; distiphallus long and slender, at least partly sclerotized . . . . . **DELIA** (p. 112)

### **CALYTHEA** Schnabl & Dziedzicki

*Calythea* Schnabl and Dziedzicki, 1911, *Nova Acta Acad. Caesar. Leop. Carol* 95 : 111 (as subgenus of *Pegomya* R.D.).

Type-species : *Musca albicincta* Fallén, 1825, by monotypy.

This genus occurs in the Palaearctic, Nearctic and Neotropical regions. Only two rather damaged females are represented in the material, which agree in most characters with the widely distributed *C. albicincta* (Fallén). Several undescribed species of *Calythea* are known to me from India, which are closely related to *albicincta*, so the Nepal females are not determined at the present time.

*Calythea* sp.

Similar to *C. albicincta* (Fallén), with a few fine hairs on hypopleuron posterior to hind spiracle, and on prosternum laterally.

NEPAL: 2 mls S.E. of Sikha, 7-8,000 ft., 1 ♀, 20.v.1954 (*J. Quinlan*); Ulleri, 6-7,000 ft., 1 ♀, 19.v.1954 (*J. Quinlan*).

**CRASPEDOCHOETA** Macquart

*Craspedochoeta* Macquart, 1851, *Mém. Soc. Sci. Agric. Lille* 1850: 241; *Dipt. Exot., Suppl.* 4: 268.

*Craspedochaeta* auctt. [Unjustified emendation].

*Melinia* Ringdahl, 1929, *Ent. Tidskr.* 50: 271.

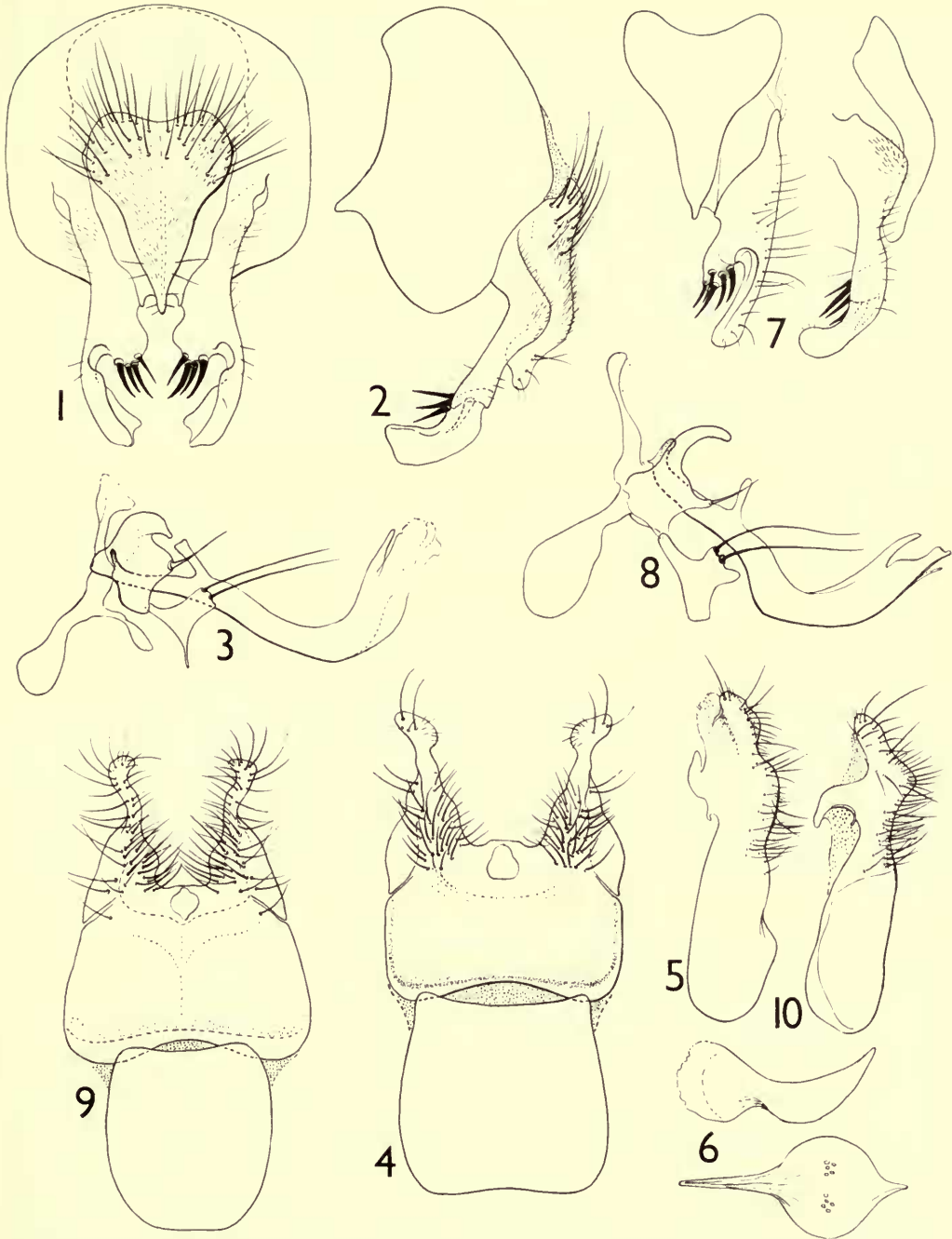
Type-species of *Craspedochoeta*: *Anthomyia punctipennis* Wiedemann, 1830, by monotypy.

This genus is almost world-wide in distribution, and is particularly well represented in the Neotropical region. The Holarctic species *C. pullula* (Zett.) occurs in India, where it differs slightly in the structure of the aedeagus; a detailed examination of Indian material may indicate subspecific status. *C. pullula* is not, so far, known from Nepal. One new species is now described from Nepal and India.

***Craspedochoeta hamata* sp. n.**

(Text-figs. 1-6)

♂ Head: ground colour black. Interfrontal area black, parafrontals, parafacials and genae whitish grey pollinose in certain lights. Eye-margins in front of ocellar tubercle almost touching, separated by about half diameter of anterior ocellus, interfrontalia and parafrontals at this point linear, and interfrontalia above constriction practically absent. Parafrontal at level of lunule about equal to width of third antennal segment, parafacials at narrowest point slightly narrower. In profile frons at lunule projecting further than epistome, face almost flat, slightly receding, hardly reflexed on lower margin. Gena about as wide as third antennal segment, one-sixth of eye-height (0.16). Antennae black, third segment twice as long as second; apex falling short of epistome by two-thirds its own width; arista long pubescent, longest hairs about twice basal diameter. Occiput swollen ventrally, lower margin of head straight posteriorly, curved upwards anteriorly towards epistome, the strong epistomal seta level with lower eye-marginal. 7-8 pairs of frontal setae, upper pair about halfway between anterior ocellus and lunule, a pair of rather strong interfrontal setulae above them. Upper postocular setulae rather short, not much longer than the setulae on disc of occiput. Haustellum rather short, mentum about 2.5 times as long as wide, pollinose; palpi black, linear, hardly wider at apex than base. Thorax: black in ground colour, with rather dense greyish green and brown pollen. Mesonotum, viewed from in front, with a brownish median vitta along *acr* setae, and perhaps traces of narrow lateral vittae. *acr* setae distinct but rather short, bi-serial, 4-5 rather irregular *prst acr*, which are closer together than to *prst dc*; no fine hairs between *acr* rows. *pra* seta distinct, about two-thirds length of posterior *npl* seta, and finer, distance between *pra* and suture only half distance between *pra* and *sa* seta. One or two developed upper anterior mesopleural setulae, and 2-3 longer setulae in front of lower part of mesopleural row. One long and strong, and one finer and shorter propleural seta, and one strong and two shorter prostigmatal setae; no fine hairs around their bases. *stpl* 2+2, lower anterior seta short and fine, lower posterior three-quarters length of upper seta. Fringe of hairs surrounding anterior spiracle pale brownish yellow, on posterior spiracle dark brown. Scutellum concolorous with mesonotum, bare in central and basal parts of disc, some fine hairs present ventrally at apex.



FIGS. 1-10. *Craspedochoeta* spp. Figs. 1-6. *C. hamata* sp. n. (paratype): 1, ♂ hypopygium, caudal view; 2, hypopygium, profile; 3, aedeagus; 4, 4th and 5th sternite; 5, 5th sternite, profile; 6, sperm pump. Figs. 7-10. *C. pullula* (Zett.) (England): 7, ♂ hypopygium, cercal plate and surstylus; 8, aedeagus; 9, 4th and 5th sternite; 10, 5th sternite, profile.

*Wings*: membrane very slightly pale brownish tinged, not darkened at base. Costal spine distinct, a little shorter than *r-m*; *r-m* and *m-m* distinctly suffused brownish. *m-m* sinuous, last section of  $M_{1+2}$  about one and three-fifths (1.6) times length of preceding section. Costa with fine setulae or hairs ventrally on whole length. Calyptrae concolorous with wing base, lower calypter not projecting beyond upper. Halteres yellow. *Legs*: black; fore tibia with a strong median *pv* seta. Mid femur without distinct *av*, 5-6 long basal *pv* setae. Mid tibia with one strong *ad* seta at apical third, one *pd* at same level, a slightly shorter *pd* just above middle, 1-2 short *p* setae, and a strong *pv* seta just below the strong *ad* and *pd*. Hind femur with *av* and *pv* setae on whole length. Hind tibia with 5-6 unequal *ad*, 3 *pd* (upper one shorter), about 4 *av* and about 6 semi-erect fine setulae posteriorly in basal half, one of which is more robust, and the middle ones irregularly placed, biserial. The strong *pv* seta apically, which is often present in *Craspedochaeta*, is very small or absent. *Abdomen*: rather robust, viewed from above, widest at posterior margin of  $T_1+2$ , tapering slightly from there to apex, slightly less than twice as long as wide (1.8). In profile semi-depressed at base, becoming almost cylindrical at  $T_4$  and  $T_5$ . Viewed from behind, densely greyish pollinose, with a distinct black interrupted median vitta (width equal to diameter of hind femur), the breaks occurring on hind margins of tergites; on  $T_5$  the vitta occupies only half length of tergite.  $T_7+8$  shining black, in sharp contrast to other tergites;  $T_9$  black, with light greyish pollen. 5th sternite, in profile, slightly elbowed.

Body-length 6 mm., wing-length 6 mm.

♀ unknown.

Holotype ♂. INDIA: Simla, W. Himalayas, 7-8,000 ft., 7.v.1910 (*Annandale*).

Paratype. NEPAL: Sukhwani, 1 ♂, 15-16.ii.1908.

I have also seen a female, which may belong to this species, from BALUCHISTAN: Quetta, iii.1931 (*A. C. Ben*), but which is not included in the type series.

*C. hamata* differs from *pullula* as follows: hind tibia with the *pv* apical seta very short or absent, costa with anterior setulae shorter, *pra* seta slightly shorter than posterior *npl* seta, abdomen less flattened in basal half. Details of the genitalia of *C. pullula* (England) are given in Text-figs. 7-10; the most conspicuous difference is in the form of the postgonites (Text-figs. 3, 8). Examples of Indian *pullula* have the same form of postgonite as European examples, though the distiphallus is slightly different.

### **DELIA** Robineau-Desvoidy

*Delia* Robineau-Desvoidy, 1830, *Mém. prés. div. Sav. Acad. Sci. Inst. Fr.* 2: 571.

Type-species: *Delia floricola* Robineau-Desvoidy, 1830, by designation of Coquillett, 1910, *Proc. U.S. natn. Mus.* 37: 531 (= *Anthomyia cardui* Meigen, 1826).

The synonymy of *D. floricola* is somewhat doubtful. In the original description of *floricola* Robineau-Desvoidy states: "... il se distingue de toutes les autres espèces par le premier article des tarsi intermédiaires un peu concave en dedans, tandis que le second article est un peu dilaté, au sommet". This would indicate that *floricola*, if not synonymous with *cardui*, at least must belong to that group of species (which includes *cardui*) with a ventral swelling on the second segment of the middle tarsi. I therefore follow Collin (1931) in the use of the name *Delia* for this group of species, and include with it other species which do not have the middle tarsal character, but are related by the structure of the surstyli, form of distiphallus,



and sometimes the possession of male secondary sexual chaetotactic characters. Three new, and one previously described species are now recorded from Nepal.

KEY TO NEPALESE SPECIES OF *DELIA* (MALES)

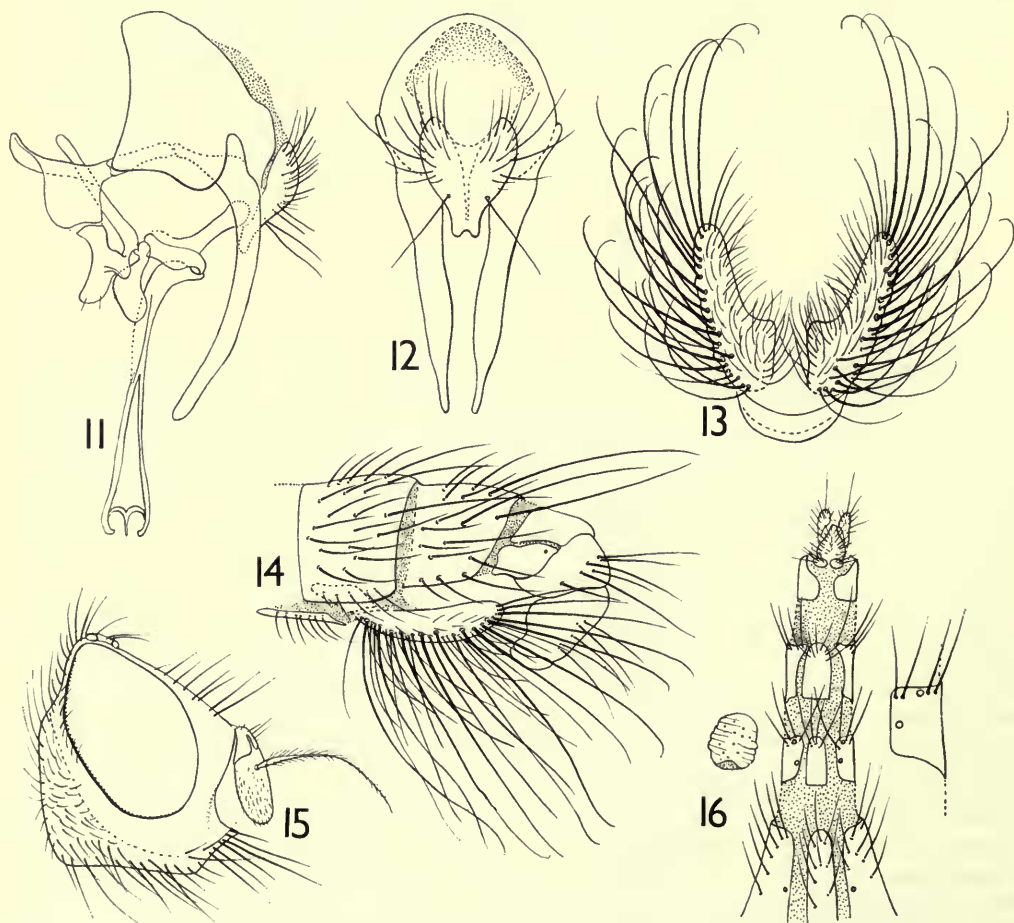
- |   |   |                          |
|---|---|--------------------------|
| 1 | <i>pra</i> seta absent . . . . .  | 2                        |
| - | <i>pra</i> seta distinct, even if short and fine . . . . .  | 3                        |
| 2 | <i>acr</i> setae almost completely absent, at most 1-2 fine <i>prst</i> pairs, and 2 pairs of fine prescutellar setae; epistome somewhat projecting; 5th sternite with long ventrally directed setae on whole length of lobes (Text-fig. 14); calyptrae paler than darkened wing base . . . . .   | <i>nepalensis</i> sp. n. |
| - | <i>acr</i> setae fine and short, but distinct on either side of suture; calyptrae pale yellowish brown, concolorous with wing base . . . . .  | <i>flavibasis</i> Stein  |
| 3 | Middle metatarsus dorsally with a fringe of curved setulose hairs; mid tibia with 1 <i>pd</i> and 1 <i>ad</i> seta; 4-5 pairs of frontal setae; <i>pra</i> seta only about three-quarters length of posterior <i>npl</i> seta; hind tibia with 7-9 <i>ad</i> setae; 5th sternite with lobes bearing strong short apical spines (Text-fig. 19) but not long ventrally directed setae . . . . . | <i>coei</i> sp. n.       |
| - | Middle metatarsus without dorsal fringe; mid tibia without <i>pd</i> or <i>ad</i> setae; 7-8 pairs of frontal setae; <i>pra</i> seta equal to length of posterior <i>npl</i> seta; hind tibia with 3-4 <i>ad</i> setae; 5th sternite with long ventrally directed setae on apical half of lobes (Text-fig. 24) . . . . .  | <i>repens</i> sp. n.     |

*Delia nepalensis* sp. n.

(Text-figs. 11-16)

♂ *Head*: ground colour of whole head black, parafrontals, parafacials and genae with whitish grey pollen in certain lights, occiput with darker pollen; interfrontalia matt black, except when viewed from a low angle in front; viewed in profile, parafrontals at level of lunule with a darker shifting patch which reaches on the parafacials to the level of insertion of arista. Eye-margins on frons nearly touching, separated at narrowest part by a little more than diameter of anterior ocellus; parafrontal at level of lunule equal to width of third antennal segment, parafacial slightly narrowing towards lower margin of eye; width of gena about one-quarter of eye-height (0.28). Lower part of occiput rather swollen; lower margin of gena straight, then obliquely turned upwards at a point level with anterior margin of eye (Text-fig. 15). Epistome projecting as far as frons at lunule. Antennae completely black, third antennal segment about 2.5 times length of second segment, the apex almost reaching epistome; arista distinctly pubescent, total width of hairs at least one-third width of third antennal segment. Frontal setae about 4 pairs, a very short pair of cruciate interfrontal setulae present above uppermost pair. Postocular setulae uniserial, rather short and becoming even shorter laterally, the vertical setae slightly stronger and differentiated from the adjacent upper postocular setulae; upper part of occiput bare. Palpi black, hardly widened at apex; haustellum rather long and slender, the pollinose mentum parallel-sided, about 6 times as long as wide, total length of proboscis nearly equal to head height. *Thorax*: completely black in ground colour; mesonotum viewed from in front with rather dense greyish pollen, a brownish pollinose median vitta along *acr*, 2 paramedian brownish vittae along *dc* setae, which are slightly narrower, and 2 brownish pollinose lateral patches covering the bases of the *ph* and *ia* setae, the humeral and notopleural areas being lighter grey pollinose. All these brownish vittae reach anteriorly only as far as the level of the first *prst dc*. Pleurae greyish pollinose. *acr* practically absent, only 1-2 fine *prst* setulae, rather close together, and 2 pairs of fine *post acr*, the prescutellar pair stronger. Mesonotum almost completely devoid of accessory setulae, a few in setae rows, on humeri, and 1-2 between anterior *ia* seta and suture, area between *ia* and *sa* seta bare. *pra* completely absent.

Notopleuron bare apart from the two setae. No developed upper anterior mesopleural setula. One long and one short propleural seta; the prostigmatal setae appear to be absent, only a few fine hairs present. *stpl* 1 + 2, lower posterior seta about two-thirds length of upper. Scutellum black with brownish grey pollen, practically bare on disc, at most two setulae laterally; ventrally at apex with a few fine pale hairs. *Wings*: slightly light brownish suffused, base distinctly brownish. Costal spine not differentiated from costal setulae. Costa bare on ventral surface. *m-m* almost straight, last section of  $M_{1+2}$  about one and three-quarters (1.76) times length of preceding section. Calyptrae whitish, contrasting with brownish wing base, lower calypter much shorter than upper. Halteres yellow. *Legs*: black, including tarsi. Fore tibia with a *p* seta. Mid femur without *av* setae, a *pv* row in basal three-quarters, becoming shorter medially. Mid tibia with one *ad* and one *pd* median seta, equal in length, the *ad* more distal by half diameter of tibia; 2-3 short *pv* setulae. Hind femur without *pv*, a few short *av* in apical half only. Hind tibia with 3 *pd*, proximal one short, 2 *ad* setae, 2 *av* setae, no *pv* preapical seta present. *Abdomen*: black, with greyish and brownish pollen. A little longer than thorax, dorsoventrally compressed, viewed from above with slightly curved margins.



FIGS. 11-16. *Delia nepalensis* sp. n. (holotype): 11, ♂ hypopygium, profile; 12, hypopygium, caudal view; 13, 5th sternite; 14, postabdomen, profile; 15, ♂ head; 16, ♀ ovipositor, ventral view.

Viewed from behind with a suffused black median vitta which is as wide as diameter of hind femur, and is weakly connected to more light brownish pollen on the basal margins of T<sub>2</sub>-T<sub>5</sub>, the remaining part of tergites with rather greenish grey pollen. 5th sternite in profile (Text-fig. 14) with long strong ventrally directed, and slightly inwardly curved setae, which are about as long as half length of abdomen, those towards apices of lobes being directed posteriorly.

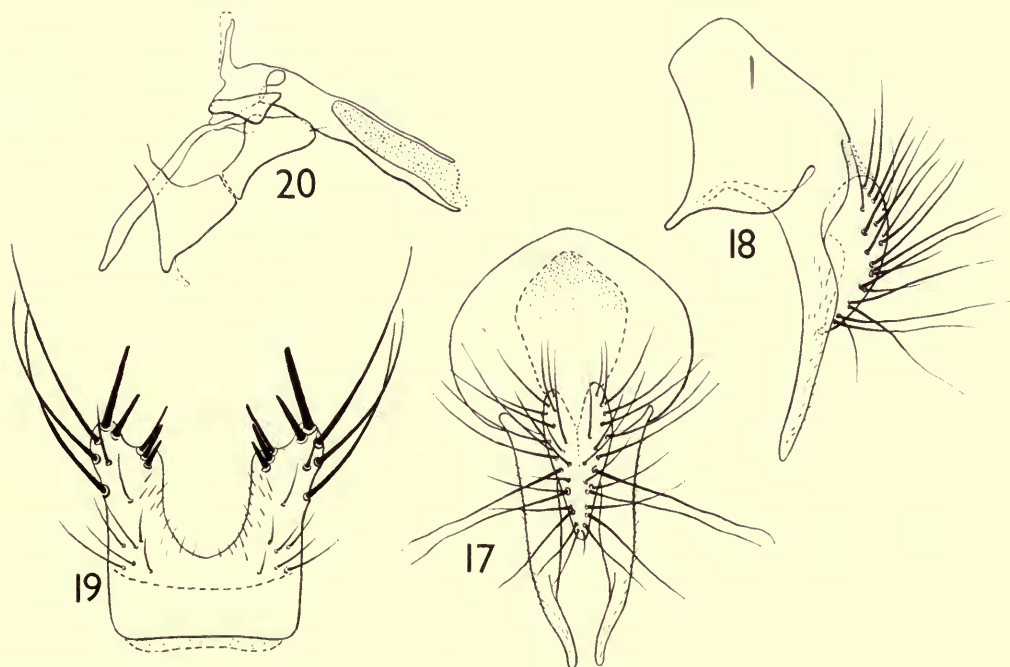
Body-length 4.5 mm., wing-length 4 mm.

♀. Agrees generally with the ♂, except for the following: mid tibia with a small median *av* seta, lower posterior sternopleural seta absent or hair-like, *prst acr* setae absent, costal spine small, but distinct from anterior costal setulae. Head with the interfrontal area brownish anteriorly, black posteriorly; eye: frons: eye ratio is 7:11:7. Frontal setae and cruciate interfrontals rather weak, inner verticals stronger, outer verticals two-thirds length of inner. Width of gena 0.41 times height of an eye. The ovipositor is figured in Text-fig. 16.

Holotype ♂. NEPAL: 2 mls S.E. Sikha, 7,000-8,000 ft., 23.v.1954 (J. Quinlan).

Paratypes. Same locality as holotype, 3 ♀, 23.v.1954; 1 ♀, 20.v.1954 (J. Quinlan); Ulleri, 6-7,000 ft., 2 ♀, 19.v.1954 (J. Quinlan).

*D. nepalensis* agrees in nearly all details with the description of *Chortophila nigribasis* Stein, (1908) from Tibet. Prof. Hennig (in litt.) has kindly supplied me with a drawing of the genitalia of a syntype of *nigribasis*, and the two species, although very closely related, differ in the chaetotaxy of the 5th sternite. In *nigribasis* the lobes of the 5th sternite are much longer, and the ventrally directed setae are more crowded together at the base, whereas in *nepalensis* they are more or less



FIGS. 17-20. *Delia coei* sp. n. (paratype): 17, ♂ hypopygium, caudal view; 18, hypopygium, profile; 19, 5th sternite; 20, aedeagus.

evenly distributed along the length of the lobes (Text-fig. 14). Stein, in the original description of *nigribasis*, gives the genae as nearly half an eye-height, but in a profile drawing of the head sent by Prof. Hennig, the genae are about the same width as in *nepalensis* (0.28 times eye-height). The hypopygium is very similar in the two species.

### *Delia coei* sp. n.

(Text-figs. 17-21)

♂ *Head*: eye-margins on frons almost touching, separated by less than diameter of anterior cellus; interfrontalia and parafrontals at this point linear. Width of parafrontal at level of lunule equal to width of third antennal segment; parafacial then narrowing to about two-thirds this width at level of lower eye-margin. Interfrontal area orange in ground colour, with greyish white pollinosity, parafacials adjacent lunule also orange, but towards genae becoming brownish, with greyish or whitish pollen; face grey. Gena about one-fifth (0.2) height of eye. Occiput black with dark greyish pollen. Upper postocular setulae uniserial, moderately long, but becoming much shorter laterally; upper part of occiput without setulae below postocular row. Vertical and ocellar setae about 4-5 pairs, slightly stronger than postocular setae. Frontal setae about 4-5 pairs, upper pairs hardly shorter than lower; a pair of fine proclinate cruciate interfrontal setulae present above upper frontal setae. Antennae completely black, third segment about 1.5 times length of second, falling slightly short of epistome; arista thickly long pubescent, the total width of hairing at widest part nearly half width of third antennal segment. Palpi black, very slender at base, becoming a little wider at apex. Mentum of haustellum black, semi-shining, but with thin whitish pollen, rather stout (nearly half as wide as long). *Thorax*: completely black in ground colour, with brownish and greyish pollen. Mesonotum, viewed from in front, with shifting indistinct vittae and patches, but at certain angles a rather wide darker vitta is visible between the *acr* setae, and faint dark patches around the bases of the *dc* setae, the lateral areas of mesonotum also darker. Pleurae with rather thin greyish pollinosity. *acr* setae strictly biserial, rows separated from each other by a distance equal to that between *acr* and *dc* rows; one pair of stronger *prst acr* (at least three-quarters length of first *prst dc*), the remaining *acr* very fine, short and hair-like, including prescutellar pair, no hairs between *acr* rows. Accessory setulae and hairs of mesonotum very sparse, a few in bristle rows, and laterally around suture. 2 unequal propleural setae, 2 unequal prostigmatal setae, with 3-4 associated hairs. *pra* seta about three-quarters length of posterior *npl* seta, situated almost equidistant from suture and *sa*. Notopleural area bare apart from the two strong setae. No developed upper anterior mesopleural setulae. *stpl* 1 + 2, lower posterior seta about three-quarters length of upper. Scutellum black with greyish pollen; completely devoid of setulae on disc apart from 2 fine setae laterally, apex ventrally with a few fine pale hairs. *Wings*: slightly brownish suffused, especially anteriorly at base. Veins brown. Costal spine absent or indistinguishable from anterior setulae. Costa bare ventrally on whole length. *m-m* straight but rather oblique. Last section of  $M_{1+2}$  about 1.66 times length of preceding section. Upper calypter brownish suffused, with brown margin and brown fringe, lower calypter much smaller and paler, with orange-brown margin and fringe. Halteres yellow. *Legs*: black. Fore tibia with one strong median *pv* seta, and at apex with a strong blunt *pv* apical seta. Mid femur with a complete row of *pv* setae. Mid tibia with a strong *pd* just before middle, a smaller *ad* below middle, and 2-3 short *pv* setae; mid metatarsus with a dorsal fringe of curved setulae. Hind femur with some very short fine *av* setae on apical half only, those at middle hardly one-third as long as diameter of femur, becoming longer at apex; a few *pv* setae on apical third only. Hind tibia with about 7-9 unequal *ad* setae, 3 long *pd* setae; *a* and *av* surfaces with numerous short erect setulae in more than one row, those towards apex becoming shorter; *p* and *pv* surfaces with numerous slightly longer semi-erect setulae at base, becoming shorter towards middle of tibia, the rows ending at apical two-thirds; *pv* apical seta absent. *Abdomen*:

black in ground colour, with rather thin brownish grey pollen; about as long as thorax, elongate-ovate, dorsoventrally compressed, only weakly swollen at apex. Viewed from behind with a very suffused wide median vitta, connected with basal dark suffusion of tergites.

Body-length 3.5 mm., wing-length 3.6 mm.

♀. The two female paratypes are general. They agree in most respects, apart from the male secondary sexual characters, with the male. They differ in having the *acr* setae even finer (apart from a stronger prescutellar pair), and lower *stpl* seta very fine or absent.

Holotype ♂. NEPAL: Taplejung District, damp evergreen oak forest above Sangu, c. 8,500 ft., 2-26.xi.1961 (R. L. Coe).

Paratypes. 2 ♂, 2 ♀, same data as holotype (except 1 ♂, 1 ♀ collected at 9,000 ft.).

*D. coei* is related to the widely distributed *D. liturata* (Meigen, 1838) (= *trichodactyla* Rondani, 1866) and those species of *Delia* which possess in the male a comb-like fringe of erect setulae on the hind tibia, and a dorsal fringe on the middle metatarsus. The arrangement of strong spines on the 5th sternite (Text-fig. 19), and the longer membranous bifurcation of the distiphallus (Text-fig. 20) appear to be characteristic of *coei*.

### *Delia repens* sp. n.

(Text-figs. 21-24)

♂ *Head*: black in ground colour, with dark greyish pollen which in certain directions is whitish grey. Eye-margins on frons at narrowest part separated by nearly twice diameter of anterior ocellus, interfrontalia distinct throughout; parafrontals at level of lunule, and parafacials rather wide, at least one and a half times width of third antennal segment, this width being well maintained towards lower part of parafacial. Gena at narrowest part wide, between two-fifths (0.42) of eye-height in holotype, and slightly more than one-quarter (0.29) in paratype. Occiput rather strongly swollen in ventral two-thirds. Epistome in profile not projecting, face rather straight and only slightly and evenly curved. Antennae black, third segment twice as long as second, apex not reaching epistome by about its own width, arista swollen at base, very short pubescent, the longest hairs not as long as basal diameter of arista. Palpi black, slender. Mentum of haustellum black, dark grey pollinose, not shining, about three times as long as wide, parallel-sided. 7-8 pairs of frontal setae, and one pair of fine cruciate interfrontal setulae present. Upper postocular setulae fine, mainly uniserial, with at most 1-2 scattered hairs immediately below. *Thorax*: completely black in ground colour, with greyish, bluish grey and brownish pollen. Mesonotum with diffused brown pollen between *dc* setae, which tends to form an indistinct median vitta between *acr* setulae, and a wider diffused brown vitta along the *ia* setae, which contrasts (when viewed from in front) with the faintly bluish white notopleural area. Viewed from behind, the dark median *prst* vitta is bordered by very narrow lighter pollinose streaks. Posterior part of mesopleuron with a brown pollinose patch. Pleurae lighter grey pollinose. *acr* setulae very fine and hairlike, not stronger than accessory setulose hairs of mesonotum; biserial, rows close together, distance between *prst acr* and *dc* setae twice distance between *acr* rows. *post acr* becoming longer, but not stronger, and more widely separated in front of scutellum. *pra* seta equal to posterior *npl*, twice as distant from *sa* as from suture. Notopleural area bare in holotype, but with one hair on each side between strong setae in paratype. Mesopleuron without any developed upper anterior setulae. One strong and one weak propleural seta, one or two prostigmatal setae, and 5-6 fine associated hairs. *stpl* setae 1 + 1. Scutellum black, dark grey pollinose, with disc brownish; central part of disc bare, only 2-3 setulose hairs at sides close to the strong marginal setae, ventral surface with some fine pale hairs apically. *Wings*: membrane light brownish tinged. Veins dark brown. Costa without fine hairs or setulae ventrally, at least beyond subcostal vein. *m-m* very weakly sinuate, rather oblique, last section of  $M_{1+2}$  slightly more than one and a half (1.62) times length

of preceding section. Costal spine hardly differentiated from anterior costal setulae. Calyptrae pale whitish yellow, contrasting with brownish wing base, fringe whitish yellow, lower calypter much shorter than upper. Halteres brownish yellow. *Legs*: black, including tarsi. Fore tibia with a short median *pv* seta. Mid femur with about 5 *pv* setae in basal half. Mid tibia apparently without *ad* or *pd* setae, no *av* seta, only 2 *p* setae. Hind femur with about 5 *av* in apical half, rather short in middle, becoming longer at apex, *pv* surface bare except for 1-2 short setae at extreme apex. Hind tibia with 3-4 *ad* setae, apical one the longest, the one above it short; about 5 *pd* setae of unequal length, the apical one longest; 2-5 short fine *p* setulose hairs in basal half. *Abdomen*: black, with grey pollen. About as long as head and thorax combined, dorsoventrally compressed, more or less parallel-sided, T<sub>2</sub> and T<sub>3</sub> the same width, T<sub>4</sub> narrower on hind margin. Viewed from behind with a distinct black median vitta, which is wider on fore-margins of each tergite, and is joined there to distinct black hind-marginal cross-bands which cover about one-third length of tergites on T<sub>3</sub> and T<sub>4</sub>. 4th sternite with 2-3 long lateral, ventrally directed setae, 5th sternite with some long ventrally directed setae at apex.

Body-length 5.5 mm., wing-length 6 mm.

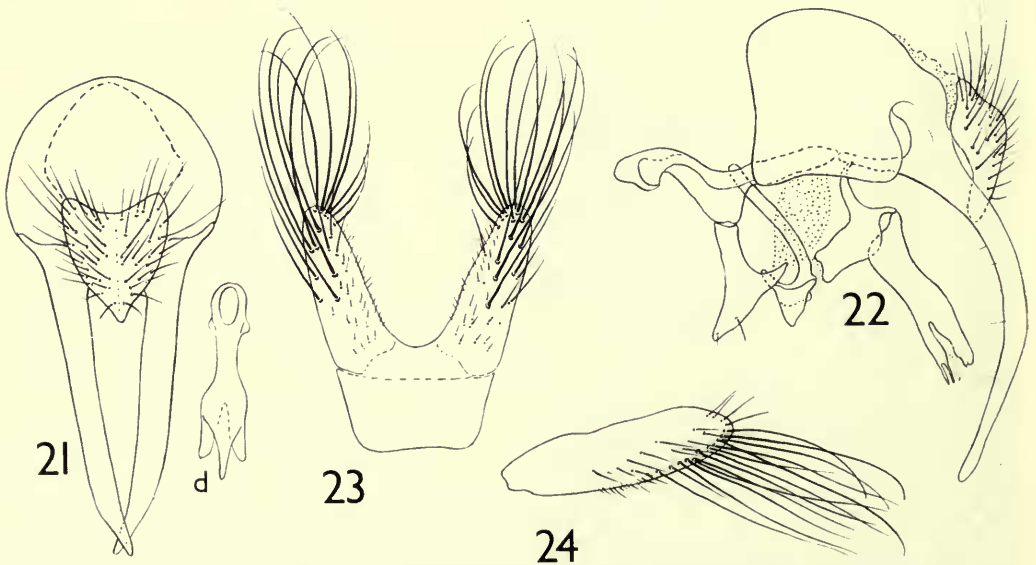
♀ unknown.

Holotype ♂. NEPAL: Mingoo Erststrip der Hilary-Expedition,\* Hang oberhalb beweidete Zwergstrauchheide, rund 4,900 m., 28. v. 1961 (*H. Janetschek*) [in Deutsches Entomologisches Institut, Berlin].

Paratype. NEPAL: Baitadi, Tinkar Khola, 13,000 ft., 1 ♂, 3. vii. 1953 (*J. B. Tyson*) [in British Museum (Nat. Hist.)].

*D. repens* is remarkably similar in general appearance to the European *Delia* (*Erioischia*) *pilipyga* (Villeneuve, 1917), having the same robust form of head with

\* Probably Mingbo Airstrip of the Hillary Expedition.



FIGS. 21-24. *Delia repens* sp. n. (paratype): 21, ♂ hypopygium, caudal view, d, distiphallus; 22, hypopygium, profile; 23, 5th sternite; 24, 5th sternite, profile.

wide parafacials, and long setae on the lobes of 5th sternite. *Erioischia* Lioy, 1864 (type-species: *Anthomyia brassicae* Wiedemann, 1833 (= *floccosa* Macquart, 1835)) can apparently only be separated from *Delia* by the possession of hairs on the ventral surface of the costa, and on notopleural area between strong setae; it is doubtful if it can be maintained as a distinct group, and Hockett (1965b) has treated the group as part of his subgenus *Delia* in the genus *Hylemya*. *Delia repens* differs from *pilipyga* (apart from the characters mentioned above) in the more slender surstyli, shorter distiphallus, *stpl* 1 : 1 (in *pilipyga* the lower posterior seta about half as long as upper), no stronger *prst acr* setae.

### *Delia flavibasis* (Stein)

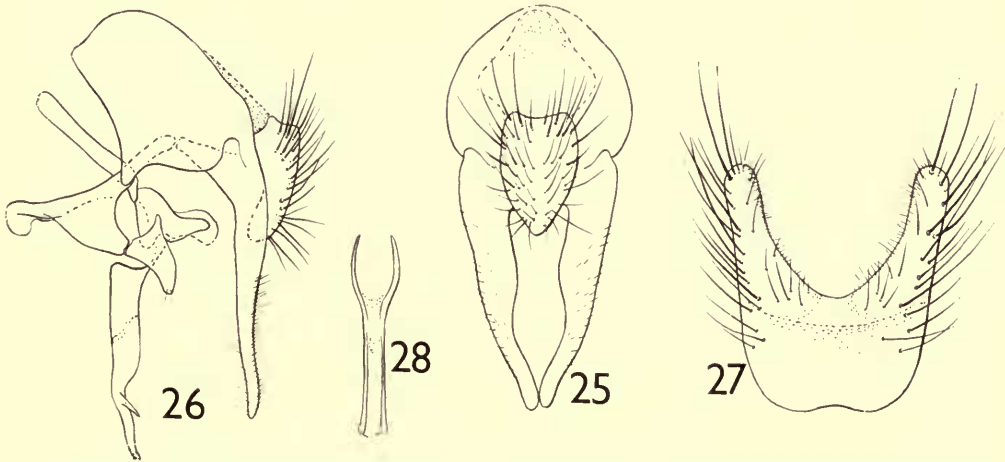
(Text-figs. 25-28)

*Chortophila flavibasis* Stein, 1903, *Mitt. zool. Mus. Berl.* 2 : 121.

Hind tibia without a comb-like fringe of fine *pv* setulae, *pra* seta absent, arista rather distinctly pubescent, setae of legs rather short and fine, *acr* setae very short.

*D. flavibasis* was originally described from Egypt. It is probably a widely distributed species in the southern Palaearctic region, and occurs in India.

NEPAL : 2 mls S.W. Ulleri, 6-7,000 ft., 2 ♂, 1 ♀, 18.v.1954 (*J. Quinlan*); Ulleri, 6-7,000 ft., 1 ♂, 1 ♀, 19.v.1954 (*J. Quinlan*); Bakhri Kharka, 5,500 ft., 1 ♂, 4 ♀, 24.iv.1954, 1 ♀, 25.iv.1954 (*J. Quinlan*); Silgarhi-Doti, Chainpur, 6,000 ft., 1 ♂, 27.vii.1953 (*J. B. Tyson*); 2 mls S.W. of Rambrong, 8,000 ft., 2 ♀, 26.iv.1954 (*J. Quinlan*).



Figs. 25-28. *Delia flavibasis* (Stein) : 25, ♂ hypopygium, caudal view ; 26, hypopygium, profile ; 27, 5th sternite ; 28, distiphallus.

**EMMESOMYIA** Malloch

*Emmesomyia* Malloch, 1917, *Bull. Brooklyn ent. Soc.* **12** : 114.

Type-species : *Emmesomyia unica* Malloch, 1917, by original designation. (= *Spilogaster socialis* Stein, 1898).

Two species of *Emmesomyia* were represented in the material, both by rather badly damaged females. No attempt has been made to identify them to species, as the Oriental species of *Emmesomyia* are greatly in need of revision.

***Emmesomyia* sp. A ♀**

This specimen has only one seta on the upper part of the pteropleuron.

NEPAL : Ulleri, 6-7,000 ft., 1 ♀, 19.v.1954 (*J. Quinlan*).

***Emmesomyia* sp. B ♀**

This specimen has three setae on the upper part of the pteropleuron.

NEPAL : Taplejung District, Sangu, c. 6,200 ft., on yellow blooms of cultivated Composite, 1 ♀, 10-16.xii.1961 (*R. L. Coe*).

**HYLEMYA** Robineau-Desvoidy

*Hylemya* Robineau-Desvoidy, 1830, *Mém. prés. div. Sav. Acad. Sci. Inst. Fr.* **2** : 550.

*Hylemyia* auctt. [Unjustified emendation].

Type-species : *Hylemya strenua* Robineau-Desvoidy, 1830, by designation of Coquillett, 1910, *Proc. U.S. natn. Mus.* **37** : 554 (= *Musca strigosa* Fabricius, 1794, preocc. Linnaeus, 1790).

An earlier designation of *Musca strigosa* Fall. [sic] by Rondani (1856, *Dipt. Ital. Prodr.* **1** : 96) is invalid (*Int. Code zool. Nomencl.*, Art. 69 (a) (iv)).

In this paper I have used the name *Hylemya* for the restricted group of species related to *H. strenua* by the following characters : arista long plumose, the longest rays at least as long as width of third antennal segment ; sternopleural setae 2 + 2 ; a developed upper anterior mesopleural setula ; costa with ventral setulae ; disc of scutellum not covered with setulae ; aedeagus with distiphallus slender and simple ; surstyli simple. Two species are recorded below from Nepal, one being described as new. In the following key I have included two Palaearctic species, *H. strenua* R.D. and *variabilis* Stein, which have rather similar genitalia. *H. variata* (Fallén), which is another Palaearctic species, has much longer backwardly curved surstyli, if Stein (1916 : 155, footnote) is correct in his limitation of Fallén's name to this species. Hockett (1924) has apparently used the name *variata* for *variabilis* in dealing with the Nearctic fauna. *H. strenua* genitalia are figured in Text-figs. 33, 34, 38, 39 ; *H. variabilis* in Text-figs. 31 and 32.

KEY TO SPECIES OF **HYLEMYA** (MALES)

- 1 Legs partly yellow (at least mid and hind tibia yellow) ; arista with longer rays (Text-figs. 40, 42) ; surstyli with more numerous and longer hairs or setulae on outer margins (Text-figs. 33, 44) . . . . . 2



- Legs completely black, or at most only a trace of reddening on mid and hind tibia ; arista with shorter rays (Text-figs. 37, 43) ; surstyli with only a few short hairs on outer margins (Text-figs. 29, 31) . . . . . 3
- 2 Femora in part yellow, coxae and trochanters more or less yellow ; *acr* setae absent on either side of suture (i.e. only anterior *prst* and prescutellar setae present) ; anterior margins of surstyli in profile with longer hairs (Text-figs. 45) ; 5th sternite generally with yellow apices to lobes ; hind tibia with 2 *pd* setae ; mesonotum and abdomen more shining in parts . . . . . *detracta* (Walker)
- Femora black ; *acr* setae rows complete ; 5th sternite lobes dark ; hind tibia with 3-4 *pd* setae ; mesonotum and abdomen not so shining . . . . . *strenua* R.D. (= *strigosa* F.)
- 3 The black interfrontalia obsolescent for a short distance on frons (eye-margins separated by almost half diameter of anterior ocellus) ; anterior spicules on first costal section less distinct and less erect ; cercal plate narrower (Text-fig. 29) . . . . . *probilis* sp. n.
- The black interfrontalia linear but distinct throughout (eye-margins separated by 1.25 times diameter of anterior ocellus) ; anterior spicules on first costal section more distinct and erect ; cercal plate wider (Text-fig. 31) . . . . . *variabilis* Stein

### *Hylemya probilis* sp. n.

(Text-figs. 29, 30, 35, 36, 37)

♂ *Head* : black in ground colour, with light grey pollen. Eye-margins on frons almost touching, separated by less than half diameter of anterior ocellus, the black interfrontalia obsolescent on part of frons. Parafrontal at level of lunule slightly less than width of third antennal segment, parafacial becoming slightly less wide at level of middle of third antennal segment. Antennae black, third segment twice length of second, apex falling slightly short of epistome. Arista long plumose, total width of hairing nearly twice width of third antennal segment. Gena slightly less than one-fifth (0.18) of eye-height. Frontal setae about 6 pairs, and one pair of cruciate interfrontal setulae. Upper postocular setulae uniserial, rather short except for upper ones next to ocellar triangle ; space immediately below upper postocular row bare. Palpi black, almost parallel-sided. Mentum of haustellum black, grey pollinose, not shining, at least 4 times as long as wide. Epistome slightly projecting. *Thorax* : black, with light grey and brownish pollen. Mesonotum with a distinct brown pollinose median vitta, which is slightly wider than width of *acr* rows, brown spots at the bases of all *dc* setae, and brown lateral vittae along the *ia* setae. Pleurae grey pollinose, with a brown patch on upper part of mesopleuron. *acr* setae biserial, without hairs between rows, anterior pair of *prst acr* slightly stronger than second *prst* pair (equal to two-thirds length of first *prst dc*) ; *prst acr* rows slightly closer together than to *dc* rows ; *post acr* short, becoming longer in front of scutellum. *pra* seta rather short, about two-thirds length of posterior *npl* seta. One long and one shorter propleural seta, one strong prostigmatal seta with 2-3 associated hairs ; a developed upper anterior mesopleural setula present. *stpl* 2 + 2, lower anterior seta short (half length of upper), lower posterior seta as long and strong as upper posterior. Scutellum concolorous with mesonotum, the median brown pollinose vitta of mesonotum continued on to disc of scutellum, disc of the latter bare, apart from 2-3 fine setulae on lateral parts near strong marginal setae. *Wings* : membrane faintly brownish suffused, veins brownish. Costa with hairs on ventral surface. Anterior spicules of costa (especially in basal section as far as costal spine) not very erect or distinct, hardly differentiated from the semi-erect hairs and setulae. *m-m* oblique and rather sinuous, last section of  $M_{1+2}$  about one and two-thirds (1.68) length of preceding section. Costal spine nearly as long as *r-m*. Calyptrae whitish yellow, with whitish yellow fringe, lower calypter at most two-thirds length of upper. *Legs* : black, including tarsi. Fore tibia with a *d* or *ad* seta at apical third, and a longer *pv* almost at middle. Mid femur with 2 *pv* at extreme base. Mid tibia with one *ad* at apical third, 2 *pd*, the distal seta stronger and nearly at the same level

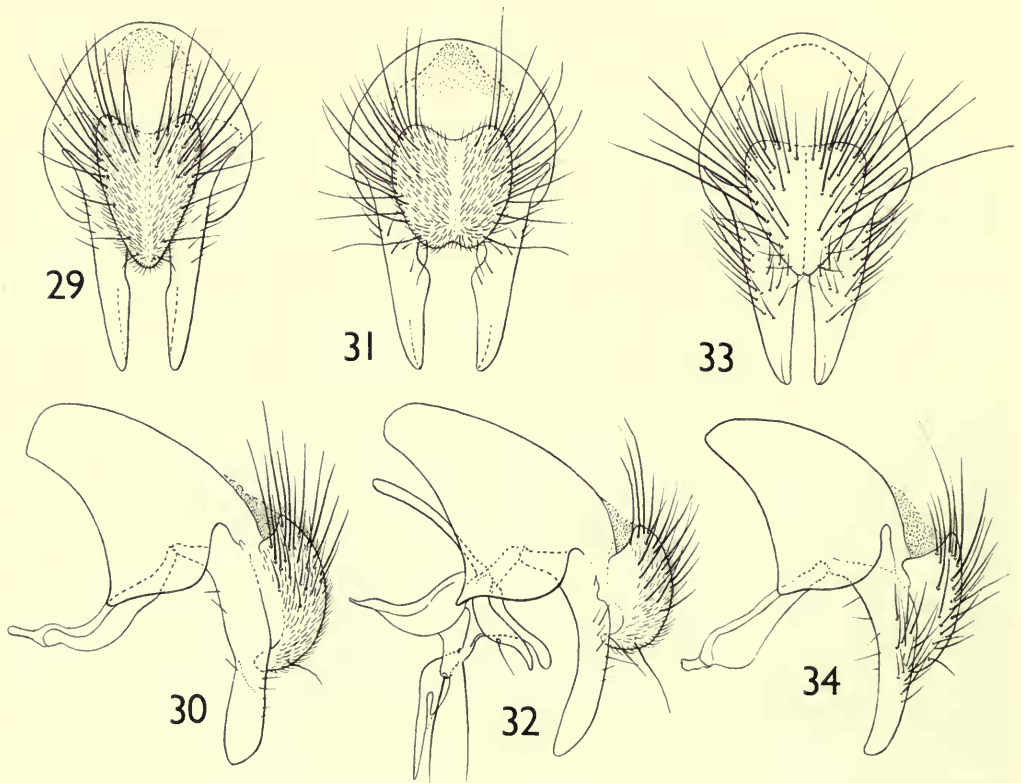
as *ad*, one *p* or *pv* seta also at same level. Hind femur with about 8 *av*, and 4-5 *pv* setae, the latter only in basal two-thirds. Hind tibia with 3 *ad*, 2 *pd*, about 3 erect *p* setulae in basal half, and 2-3 *av* in apical half. *Abdomen*: black in ground colour, with greyish pollen, and a narrow dark median vitta; only slightly dorsoventrally compressed.

Body-length 7.5 mm., wing-length 6 mm.

♀ unknown.

Holotype ♂. NEPAL: Taplejung District, damp evergreen oak forest above Sangu, c. 8,500 ft., 2-26.xi.1961 (R. L. Coe).

Apart from the differences in the genitalia, *H. probilis* differs from *strenua* R.D. in having completely black legs, mentum of haustellum at least 4 times as long as wide (in *strenua* hardly 3 times), hind tibia with only 2 *pd* setae (*strenua* with 3-4 *pd* setae). From *variabilis* Stein it differs in having the eye-margins on frons almost touching, with the black interfrontalia obsolescent for some distance, and anterior spicules of costa less distinct and not so erect.



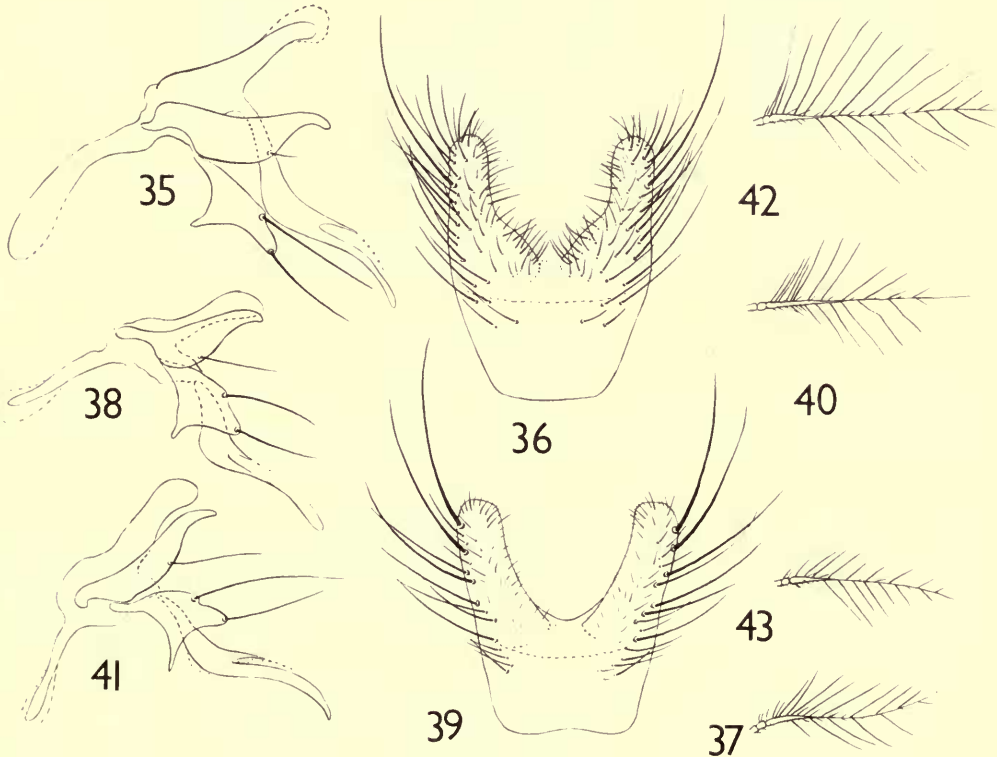
FIGS. 29-34. *Hylemya* spp. Figs. 29-30. *H. probilis* sp. n. (holotype): 29, ♂ hypopygium, caudal view; 30, hypopygium, profile. Figs. 31-32. *H. variabilis* Stein (England): 31, ♂ hypopygium, caudal view; 32, hypopygium, profile. Figs. 33-34. *H. strenua* R.D. (= *strigosa* F.) (England): 33, ♂ hypopygium, caudal view; 34, hypopygium, profile.

*Hylemya detracta* (Walker)

(Text-figs. 41, 42, 44, 45, 46)

*Anthomyia detracta* Walker, 1852, *Insect. Saund.* 1: 356.

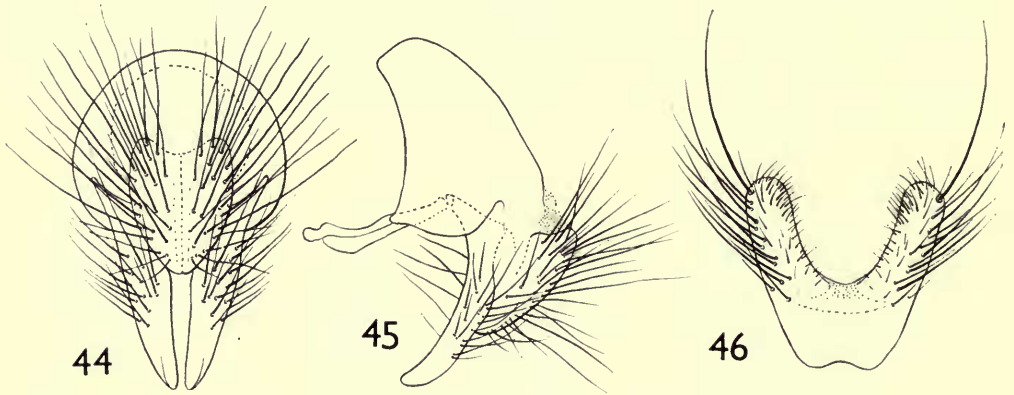
*H. detracta* appears to be very variable in both size and colour. The holotype ♂ (from the East Indies) is in the British Museum (Nat. Hist.), and I have examined it. Its condition is rather poor, and the abdomen is missing. It has completely yellow legs and a yellow apex to scutellum; this condition is perhaps due to the age of the specimen, or it may have been rather teneral. In a long series of *detracta* from various localities in the Oriental region that I have examined, no specimen without some darkening on the legs, or with a yellow apex to the scutellum could be found; nevertheless the holotype of *detracta* possesses all the essential characters of the widely distributed species represented in the series examined, i.e. a long plumose arista, sternopleural setae 2 + 2, and a well developed upper anterior mesopleural setula. I consider the specimens from Nepal to be conspecific with the holotype of *detracta*, which may be separated from other species of *Hylemya* by the following characters: only one pair of *prst acr* setae, and 2-3 pairs of *post acr*;



FIGS. 35-43. *Hylemya* spp. Figs. 35-37. *H. probilis* sp. n. (holotype): 35, aedeagus; 36, 5th sternite; 37, arista. Figs. 38-40. *H. strenua* R.D. (= *strigosa* F.) (England): 38, aedeagus; 39, 5th sternite; 40, arista. Figs. 41-42. *H. detracta* (Walker) (Nepal): 41, aedeagus; 42, arista. Fig. 43, *H. variabilis* Stein, arista.

mesonotum and abdomen more shining, especially the dark pattern; arista with longer rays; legs generally mainly yellow, including coxae and trochanters, but not tarsi; fore femur often with a dark dorsal streak, and mid and hind femora with a dark dorsal apical streak or band; 5th sternite generally with yellow apices to lobes. The genitalia of the Nepal male has long hairs laterally on surstyli, and in profile, some long hairs on anterior margin. The specimens from Darjiling and Mussoorie, India, determined by Stein (1918: 178) as *Hylemya nigrimana* (Meigen) and *strigosa* (Fabricius) almost certainly refer to *detracta*.

NEPAL: 2 mls S.E. Sikha, 7-8,000 ft., 1 ♂, 1 ♀, 22.v.1954 (J. Quinlan); Taplejung District, damp evergreen oak forest above Sangu, c. 8,500 ft., 1 ♀, 2-26.xi.1961 (R. L. Coe).



FIGS. 44-46. *Hylemya detracta* (Walker): 44, ♂ hypopygium, caudal view; 45, hypopygium, profile; 46, 5th sternite.

### LASIOIMMA Stein

*Lasiomma* Stein, 1916, *Arch. Naturgesch.* [1915] A, **81**: 44 (footnote), 183 (as subgenus of *Chortophila* Macq.).

Type-species: *Lasiops ctenocnema* Kowarz, 1880, designated by Séguy, 1937, *Genera Insect.* **205**: 123 (= *Aricia eriophthalma* Zetterstedt, 1860).

According to Collin (1939: 146), *ctenocnema* Kow. and *roederi* Kow. are the same species; Ringdahl (1933: 32) has synonymised *roederi* with *eriophthalma* Zett. It should be noted that Collin's *eriophthalma* Zett. (sensu Kowarz) is another species, probably *anthomyinum* Rondani. The termination must be changed to *eriophthalmum* as *Lasiomma* is neuter.

### *Lasiomma eriophthalmum* (Zetterstedt)

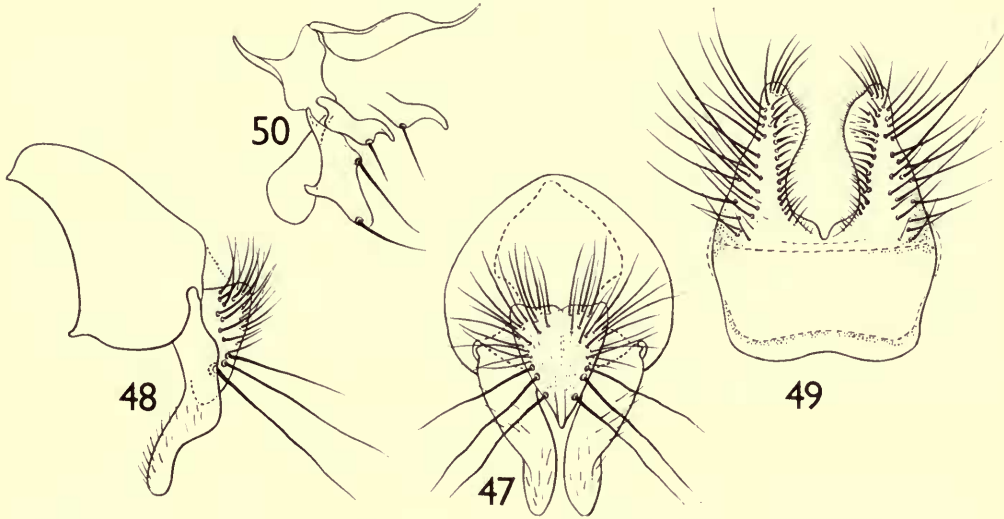
(Text-figs. 47-50)

*Aricia eriophthalma* Zetterstedt, 1860, *Dipt. Scand.* **14**: 6236.

The Nepal specimens agree in essential details, including genitalia, with European specimens. They differ in having the eyes much less densely haired, with the hairs

shorter, the narrow pale presutural median vittae on mesonotum more distinct, and the abdominal median vitta slightly wider. The variation in eye-hair length in other species in different parts of their range has also been observed, and it seems inadvisable to create any formal status for this variation in *L. eriophthalmum*.

NEPAL: Taplejung District, above Sangu, leaves of shrubs on sunny ridge, c. 7,500 ft., 10 ♂, 14.i.1962 (R. L. Coe).



FIGS. 47-50. *Lasiomma eriophthalmum* (Zett.) (Nepal): 47, ♂ hypopygium, caudal view; 48, hypopygium, profile; 49, 5th sternite; 50, aedeagus.

### **PAREGLE** Schnabl

*Paregle* Schnabl, 1911, *Dt. ent. Z.* 1911 : 71 (as subgenus of *Hylemya* R.D.).

Type-species: *Musca radicum* Linnaeus, 1758, by designation of Hockett, 1924 : 39.

### *Paregle cinerella* (Fallén)

*Musca cinerella* Fallén, 1825, *Mon. Muscidum Sveciae* [Pars 8] : 77.

*Hylemyia (Paregle) cinerella* (Fallén); Schnabl, 1911, *Dt. ent. Z.* 1911 : 71.

As pointed out by Hockett (1924 : 39), *P. cinerella* does not readily conform to the concept of *Paregle* as suggested by the type-species; the different hind tibial chaetotaxy (2 : 2 dorsal setae in *cinerella*, and about 3 : 6 in *radicum*), and the different structure of the distiphallus in the male, do not imply very close affinity. Nevertheless *cinerella* is probably more closely related to *Paregle radicum* than to any other species.

*P. cinerella* is a widely distributed species, having been recorded from the whole of the northern hemisphere.

NEPAL: Baitadi, Tinkar Khola, 13,000 ft., 7 ♂, 5 ♀, 3.vii.1953 (*J. B. Tyson*); Siklis, 7,000 ft., 1 ♂, 22.iv.1954 (*J. Quinlan*); Bakhri Kharka, 5,500 ft., 1 ♂, 24.iv.1954 (*J. Quinlan*).

### PEGOHYLEMYIA Schnabl

*Pegohylemyia* Schnabl, 1911, *Dt. ent. Z.* 1911 : 75 (as subgenus of *Hylemyia*).

Type-species: *Musca cinerea* Fallén, 1824, by designation of Hockett, 1965b : 852.

The name *Pegohylemyia* was first published (Schnabl, 1911 : 75) on January 2nd, 1911. Three species were included, one of which was *cinerea* Fall., but no description of the characters of *Pegohylemyia* was given. According to the International Code, Art. 12 and 16, the name *Pegohylemyia* is valid from this date. The name was again published in 1911 (Schnabl & Dziedzicki, 1911 : 98); the exact date is uncertain, but the paper was not communicated to the Academy until 12th December, 1910, and therefore is unlikely to have been published before 2nd January, 1911. Four additional species were added (including *gnava* Meigen) to the original three. Collin (1931 : 87) stated that "*gnava* Bouché (sic) may be taken as typical" with reference to *Pegohylemyia*. According to Art. 69 (a) (iv) this cannot be accepted as a valid type-species designation. It is unfortunate that *Musca cinerea* Fall. appears to have been misidentified by several of the earlier authors; for the time being, I accept Ringdahl's interpretation of the species.

#### KEY TO THE NEPALESE SPECIES OF *PEGOHYLEMYIA* (MALES)

- 1 Larger species, about 4 mm. ; about 12 pairs of frontal setae and hairs of unequal strength ; *acr* setae irregularly quadriserial, mainly hair-like ; gena about 0.23 times eye-height ; wing base bright yellow . . . . . ***quinlani*** sp. n.  
 - Smaller species, about 3 mm. ; at most about 8 pairs of frontal setae ; *acr* setae biserial ; gena about 0.17 times eye-height . . . . . ***nupera*** sp. n.

### *Pegohylemyia quinlani* sp. n.

(Text-figs. 51-54)

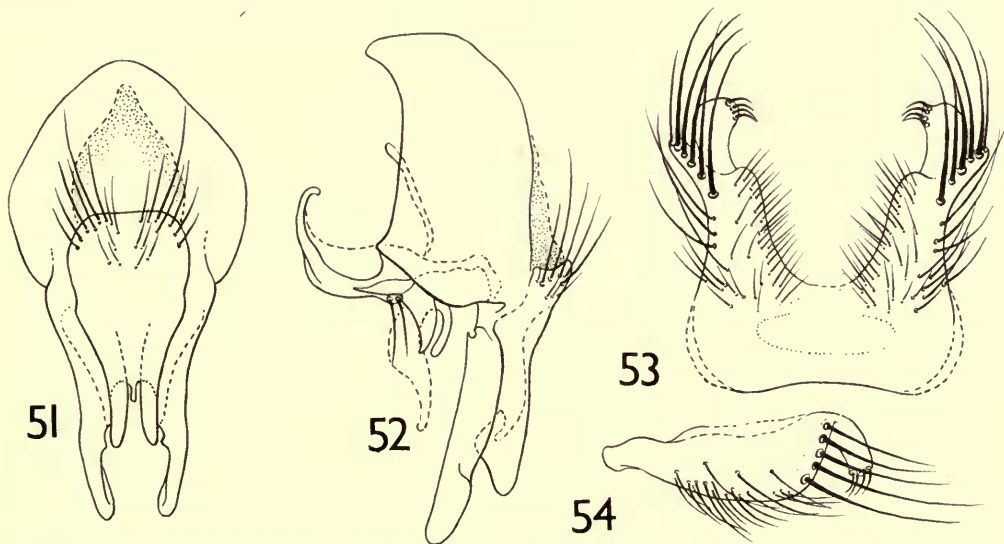
♂ *Head*: eye-margins on frons nearly touching, at narrowest part separated by less than diameter of anterior ocellus. Interfrontal area, parafrontals, parafacials and genae orange-yellow in ground colour, with yellow pollen, only darkened brownish on interfrontal area in front of ocellar triangle, and on genae posteriorly. Face yellowish in ground colour, with light brownish yellow pollen. Frontal setae about 12 pairs, 5-6 of which are stronger, these alternating with the remaining ones which are finer and more hair-like. A distinct pair of proclinate cruciate interfrontal setulae present. Antennae black, third segment about one and two-thirds (1.7) times length of second segment, apex reaching level of epistome. Arista pubescent, longest hairs fully as long as diameter of the slightly swollen base. Parafrontals at level of lunule as wide as width of third antennal segment, parafacials narrowing slightly towards level of lower margin of eye. Gena at narrowest part about one quarter of eye-height (0.23), setae on lower part of genae multiserial. Epistome in profile not projecting, behind level of frons at lunule. Occiput black, with dark grey pollen, lower half swollen. Upper postocular setulae long and fine, length maintained laterally, and some fine black setulae on upper part of occiput. Vertical, postvertical and ocellar setae not differentiated from the postocular setulae. Palpi black, slender, not swollen at apex. Haustellum rather short, the lightly pollinose brownish mentum slightly shorter than palpi. Eyes appearing bare, but under high magnification with very short sparse hairs, only visible in certain lights. *Thorax*: black in ground colour though

pleurae and scutellum rather translucent brownish in parts, with light greyish pollen. Viewed from in front there are no apparent vittae; viewed from behind with a faint suggestion of a pair of lighter pollinose vittae along the *dc* setae. One or two pairs of developed *prst acr* anteriorly, the strongest of which is about three-quarters as long as the first *prst dc*; distance between *prst acr* rows equal to distance between *acr* and *dc* rows; remaining *acr* represented by fine bi- to quadriseriate setulose hairs, hardly discernible from the accessory hairs of mesonotum, only one strong pair immediately in front of scutellum. *pra* seta equal in length to posterior *npl* seta, and much closer to suture than to *sa* seta. No developed upper anterior mesopleural setula. Two unequal prostigmatal setae, with about 6-9 associated hairs, two propleural setae, *stpl* 1 + 2, lower posterior seta nearly as long as upper. Scutellum blackish brown in ground colour, with greyish pollen, median basal part of disc bare, ventral surface at apex with some fine pale hairs. *Wings*: membrane clear pale yellowish orange at base, otherwise almost clear, veins pale brownish. Costal spine absent. Costa bare on ventral surface. *m-m* nearly straight and rather upright. Last section of  $M_{1+2}$  about 1.4 times length of preceding section. Calyptrae yellowish orange with pale yellow fringe; lower calyptrae slightly smaller than upper. *Legs*: brownish black, the tibiae, especially mid and hind pair, translucent yellowish brown medially; tarsi brownish black. Fore tibia with a distinct median *p* or *pv* seta. Mid femur with a row of long *pv* setae in basal half, becoming shorter apically. Mid tibia with 2 subequal *pd* setae, a shorter *ad* at level of distal *pd*, and 2 much shorter *pv* setae. Hind femur with complete rows of long *av* and *pv* setae, the setae of the *pv* row slightly shorter, especially at base. Hind tibia with 4 *ad*, median pair the longest, and 3 *pd*, basal seta short, apical one longest; 2 *av* setae in apical half, 2-3 fine *pv* hairs in basal half; *pv* apical seta absent. *Abdomen*: very short, not quite as wide as thorax, dorsoventrally compressed, and only slightly swollen at apex. Black in ground colour, with greyish pollen; a narrow brownish black parallel-sided median vitta (about as wide as hind tibia) on all segments.

Body-length 4 mm., wing-length 5 mm.

♀ unknown.

Holotype ♂. NEPAL: 2 mls S.W. of Rambrong, 8,000 ft., 26.iv.1954 (*J. Quinlan*).



FIGS. 51-54. *Pegohylemyia quinlani* sp. n. (holotype): 51, ♂ hypopygium, caudal view; 52, hypopygium, profile; 53, 5th sternite; 54, 5th sternite, profile.

Paratype. INDIA: Darjiling, 1 ♂, 20-24.v.1917 (*E. Brunetti*).

*P. quinlani* appears to have some affinity with the European *P. seneciella* (Meade), especially in the form of the genitalia. This latter species has been figured by Ringdahl (1959: 322) under the name *gnava* (Mg.).

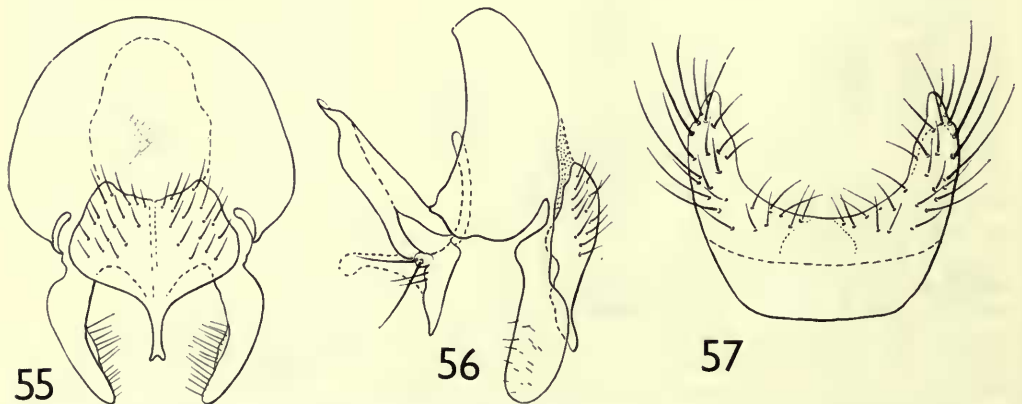
### *Pegohylemyia nupera* sp. n.

(Text-figs. 55-57)

♂ *Head*: interfrontalia, parafrontals, parafacials and genae orange-yellow in ground colour, with shining whitish pollen when viewed from above (except interfrontalia). Occiput black with dark grey pollen. Upper part of interfrontalia rather darker brownish. Eye-margins at narrowest part on frons separated by diameter of anterior ocellus. Parafrontals at level of lunule rather projecting, about as wide as width of third antennal segment, this width maintained on parafacials towards epistome, which is at same level as frons at lunule. Gena the same width as a parafacial, about one-sixth of eye-height (0.17). Antennae black, third segment about 1.5 times length of second, but almost reaching epistome. Arista swollen at base, pubescent, the hairs not longer than basal diameter. Palpi dark brown or black, slender. Mentum of haustellum brown or black, length about three-quarters length of fore tibia. Frontal setae about 7-8 pairs; a pair of small cruciate interfrontal setulae above uppermost frontal seta. Upper postocular setulae rather long, apparently more than uniserial, the length well maintained laterally, where the setulae curve forwards. *Thorax*: black, with dark grey pollen. No distinct vittae on mesonotum in holotype, but the *acr* area is somewhat darker when viewed from behind. *acr* setae fine, biserial, one pair of longer fine *prst acr* (equal to first *prst dc*), which are separated from each other by the same distance between them and the *prst dc*; *post acr* very fine and short, hardly discernible from accessory mesonotal hairs. *pra* seta distinct (partly broken off in holotype) and at least as robust as posterior *npl* seta, length not ascertainable. Scutellum concolorous with thorax. *Legs*: in very bad condition. Black, mid tibia with one *ad* seta, and one (probably two) *pd* setae. *Wings*: costal spine absent. Costa bare ventrally. Membrane almost clear, veins pale brownish. Calyptrae pale whitish yellow. *Abdomen*: in very bad condition. Dorsoventrally compressed, hardly swollen at apex.

Body-length about 3 mm.

♀ unknown.



FIGS. 55-57. *Pegohylemyia nupera* sp. n. (holotype): 55, ♂ hypopygium, caudal view; 56, hypopygium, profile; 57, 5th sternite.



Holotype ♂. NEPAL: Baitadi, Tinkar Khola, 13,000 ft., 3.vii.1953 (*J. B. Tyson*).

*P. nupera* appears to be related to the recently described Nearctic *P. vallaris* Hockett, 1965, especially in the form of the 5th sternite, though the apex of the cercal plate in *vallaris* is not produced into a point. *P. vallaris* is also a very small species. In spite of the rather poor condition of the holotype, it should be recognisable through the structure of the genitalia.

### **PHORBIA** Robineau-Desvoidy

*Phorbia* Robineau-Desvoidy, 1830, *Mém. prés. div. Sav. Acad. Sci. Inst. Fr.* 2: 559.

Type-species: *Phorbia musca* Robineau-Desvoidy, 1830, designated by Coquillett, 1910, *Proc. U.S. natn. Mus.* 37: 589.

For discussion of the use of the name *Phorbia*, see Hockett (1947). In this paper I follow the generally accepted application of the name to the group of species with a swollen postabdomen in the male, and a laterally compressed, sclerotized ovipositor in the female. Two new species are described from Nepal, which can only be separated at present by the structure of the male genitalia.

### ***Phorbia tysoni* sp. n.**

(Text-figs. 58-63)

♂ *Head*: ground colour black, parafacials and parafrontals silvery white pollinose. Eye-margins at narrowest part of frons separated by width of anterior ocellus. Head in profile of usual *Phorbia*-shape. Parafrontals at level of lunule slightly wider than width of third antennal segment, parafacials at narrowest part slightly less wide. Epistome, in profile, slightly behind level of profrons, width of gena about one-fifth (0.19) of eye-height. Antennae black, third segment about one and three-quarters (1.75) length of second, arista short pubescent, with longest hairs not longer than diameter of the slightly swollen base. Haustellum black, mentum slightly shining, but with some pollen, about 3 times as long as wide, rather slender. *Thorax*: black, dark grey pollinose, lighter grey pollen on humeri, a trace of two narrow pale grey pollinose presutural vittae between *acr* and *dc* rows. *acr* setae short and fine, biserial, *prst acr* hardly one-third length of first *prst dc* setae (in some examples even shorter), and rows close together, distance between *acr* and *dc* rows at least 4 times the distance between *acr* rows; one longer pair of prescutellar *acr* setae. *pra* seta long, about 1.25 times length of posterior *npl* seta, and placed very close to suture, at least 4 times as distant from *sa* as from suture. *stpl* 1 + 2, lower posterior seta nearly as long as upper. Scutellum black, almost bare on disc, with only 2-4 fine setulae laterally inside level of strong marginal setae; apex ventrally with a few very fine short pale hairs, almost imperceptible. *Wings*: membrane dark brown at base, and brownish suffused along anterior margin, apex and hind margin almost clear. Veins brown. Costa without setulae on ventral surface, except 2-3 in basal section (not discernible in dried specimens). Costal spine very short and hardly distinct, not much longer than costal setulae. *m-m* almost straight, not very oblique. Last section of  $M_{1+2}$  about one and a half (1.6) times length of preceding section. Calyptrae whitish yellow, with whitish fringe, contrasting with brown wing base, lower calypter very small. Halteres yellow. *Legs*: black. Mid tibia apparently without an *av* seta, though one may be present in well preserved specimens (females belonging to this or the next species possess a well developed *av* on the mid tibia); one *ad*, 2 *pd*. Hind femur with *av* and *pv* setae. Hind tibia with 3-4 *ad*, 3-4 *pd*, and 3 rather long *av* setae; *pv* apical seta absent. *Abdomen*: black, with dark grey pollen. In profile strongly

swollen apically, somewhat compressed dorsoventrally at base, but not completely flattened. Lobes of 5th sternite very distinct, projecting slightly beyond apex of T<sub>9</sub> in profile, lower margins (i.e. inner) with dense inwardly curved comb-like short setulae. ♂ *genitalia*: this species is remarkable in having asymmetrical genitalia, the cercal plate being produced into a lobe-like swelling on the left side only, and the surstyli also being slightly asymmetrical. The right praegonite is much larger than the left. This condition is present in three of the paratypes, as well as the holotype, and is therefore very unlikely to be due to parasitism.

Body-length 4 mm., wing-length 3.75 mm.

♀ unknown.

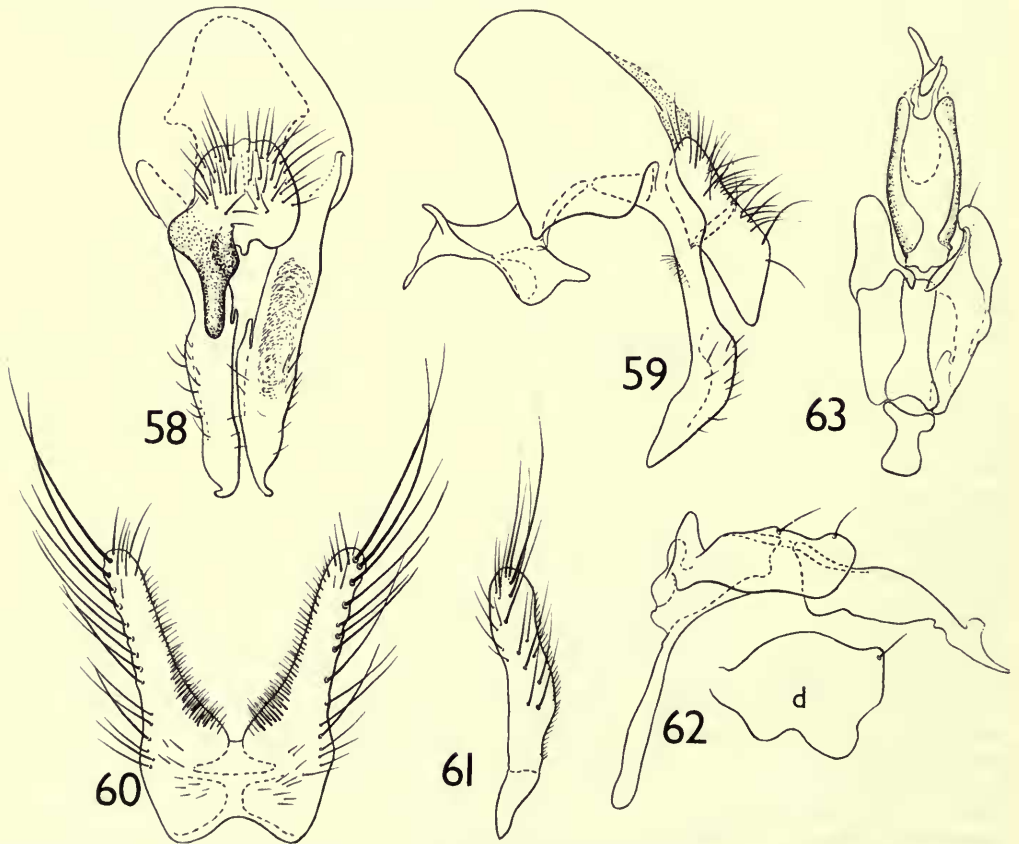
Holotype ♂. NEPAL: Baitadi, Tinkar Khola, 3.vii.1953 (*J. B. Tyson*).

Paratypes. 4 ♂, same data as holotype (one paratype mounted on a slide).

***Phorbia morula* sp. n.**

(Text-figs. 64-69)

♂: only differs from *P. tysoni* in the form of the genitalia: cercal plate with the apical lobes the same length, but the left side produced posteriorly (when viewed in profile); in caudal view



FIGS. 58-63. *Phorbia tysoni* sp. n. (holotype): 58, ♂ hypopygium, caudal view; 59, hypopygium, profile; 60, 5th sternite; 61, 5th sternite, profile; 62, aedeagus, lateral view, d, right praegonite; 63, aedeagus, ventral view.

the two sides are only very slightly asymmetrical. Aedeagus with the praegonites nearly symmetrical, indentation on dorsal surface of praegonite between setae larger. 5th sternite with the lobes shorter in relation to median length of basal part. The paratype from the same locality as the holotype has a slightly differently shaped 5th sternite to the holotype, but the genitalia are otherwise identical.

♀ unknown.

Holotype ♂. NEPAL: Baitadi, Tinkar Khola, 3.vii.1953 (*J. B. Tyson*).

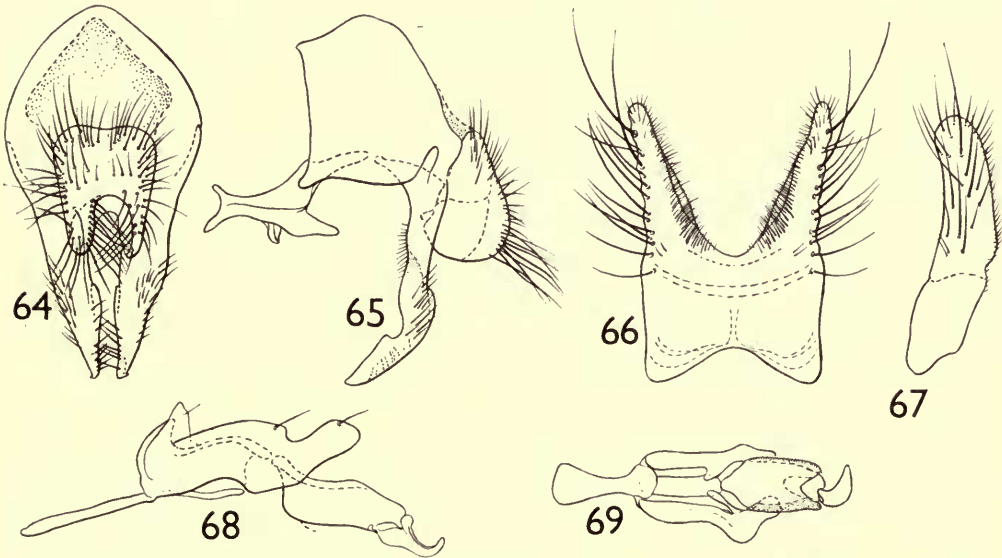
Paratypes. 1 ♂, same data as holotype [in British Museum (Nat. Hist.)]; 1 ♂, Mingoo Ersttrip der Hilary-Expedition,\* Hang oberhalb beweidete Zwergstrauchheide, rund 4,900 m. (*H. Janetschek*) [in Deutsches Entomologisches Institut, Berlin].

*Phorbia* sp. ♀

Nine females of a *Phorbia* species were collected at the same time and place as the two species described above. No morphological characters can be found to separate them into two species, or to associate them with either one or the other of the above species.

NEPAL: Baitadi, Tinkar Khola, 9 ♀, 3.vii.1953 (*J. B. Tyson*).

\* Probably Mingbo Airstrip of the Hillary Expedition.



FIGS. 64-69. *Phorbia morula* sp. n. (holotype): 64, ♂ hypopygium, caudal view; 65, hypopygium, profile; 66, 5th sternite; 67, 5th sternite, profile; 68, aedeagus, lateral view; 69, aedeagus, ventral view.

**NUPEDIA** Karl

*Nudaria* Karl, 1928, *Die Tierwelt Deutschlands* 13 Teil, Diptera III Muscidae : 171 (as subgenus of *Chortophila* Macq.) [preocc. Haworth, 1809, Lepidoptera].

*Nupedia* Karl, 1930, *Zool. Anz.* 86 : 174 [n. n. for *Nudaria* Karl].

Type-species of *Nudaria* (and hence of *Nupedia*) : *Anthomyia dissecta* Meigen, 1826, by original designation.

The type-species has been shown (Ackland, 1965) to be misidentified, and an application to change the type-species has been made to the International Commission on Zoological Nomenclature (1965, *Bull. zool. Nomencl.* 22 : 110). In this paper the previously accepted usage of *Nupedia* is followed.

***Nupedia aestiva* (Meigen) comb. nov.**

*Anthomyia aestiva* Meigen, 1826, *Syst. Besch.* 5 : 169.

*Egle aestiva* (Meigen) ; Schnabl and Dziedzicki, 1911, *Nova Acta Acad. Caesar. Leop. Carol.* 95 : 105.

*Hylemyia (Paregle) aestiva* (Meigen) ; Séguy, 1923, *Faune de France* 6 Diptères Anthomyides : 105.

*N. aestiva* has previously been placed in *Paregle* Schnabl, 1911, no doubt because it possesses a projecting epistome. Its true affinities (as pointed out by Collin, 1931 : 88) are with *Nupedia infirma* (Meigen, 1826) (= *Nupedia dissecta* auctt. not Meigen), see Ackland (1965). *Nupedia* may be characterized by the following combination of characters : praegonites and postgonites well developed, but of simple form, and both with setae, distiphallus large, robust and sclerotized, apically enlarged, and with teeth or sharp lateroventral projections, 5th sternite more or less heart-shaped, and with numerous short strong setulae on posterior part (along inner margins of lobes) ; there also appear to be two *ad* and two *pd* setae on the hind tibia ; the costa may be hairy or bare ventrally, and the surstyli simple or forked at apices. Most of these characters are shared by *Pegoplata* Schnabl, 1911, and the two groups are probably closely related ; *Pegoplata* species have however, rather different surstyli, and the 6th tergite is exposed and bears several setae. *Nupedia aestiva* is the only species of *Nupedia* known to me with a projecting epistome and an *av* seta on the mid tibia.

*N. aestiva* is a common and widely spread species in Europe, and has also been recorded from North America.

NEPAL : Mingoo Ersttrip der Hilary-Expedition,\* Hang oberhalb beweidete Zwergstrauchheide, rund 4,900 m., 2 ♂, 1 ♀, 28. v. 1961 (*H. Janetschek*) ; Zwerg-rhododendrenbestände beim Basislager bei Pangpoche, rund 3,900 m., Kätischerfang, 1 ♂, 12. v. 1961 (*H. Janetschek*) ; Kätischerfang im Rodoretum beim Basislager bei Pangpoche, rund 3,900 m., 1 ♂, 26. v. 1961 (*H. Janetschek*) [in Deutsches Entomologisches Institut, Berlin].

\* Probably Mingbo Airstrip of the Hillary Expedition.

**PSEUDOMYOPINA** Ringdahl

*Pseudomyopina* Ringdahl, 1933, *Ent. Tidskr.* **54** : 31 (as subgenus of *Hylemya* R.D.).

Type-species: *Aricia moriens* Zetterstedt, 1845, by monotypy.

*Aricia moriens* was described from two specimens taken in Sweden (Jämtland, Mullfjället) and both sexes from Norway (Kälähög). The subgenus *Pseudomyopina* was erected for it by Ringdahl in order to separate it from other species with a wide frons in the male (*Myopina* R.D., 1830) from which it differed in a number of characters, especially in having a rather wide, dorsoventrally compressed abdomen, not laterally compressed as in *Myopina myopina* (Fallén).

Among the material from Nepal submitted by Dr. Morge was an undescribed species which appeared to agree quite closely with the essential characters given by Ringdahl for *Pseudomyopina*. Prof. Hennig has also sent me a further closely related undescribed species from Tadzhikistan, which he has kindly allowed me to describe in this paper.

In order to make a detailed examination of the type-species of *Pseudomyopina*, I wrote to Mr. H. Andersson of the Zoological Institute, Lund, who very kindly sent me a male syntype of *Aricia moriens* from Kälähög. The genitalia of this syntype are figured in Text-figs. 70-73. Hockett (1965, figs. 58, 135, 229) has given figures of the genitalia of a North American species determined as *moriens* Zett., but which is not the same species as the Norwegian syntype. The Kälähög syntype has genitalia which are closer to *defector* Hockett, described and figured in the same paper. Because of the possibility that the other syntypes of *moriens* from Sweden may not be conspecific with the Kälähög syntype (Mr. Andersson, *in litt.* mentions that there is a male and a female syntype from Mullfjället in the collection) I am not designating the Kälähög syntype as lectotype.

The two new species described below have the following characters in common with *A. moriens* :

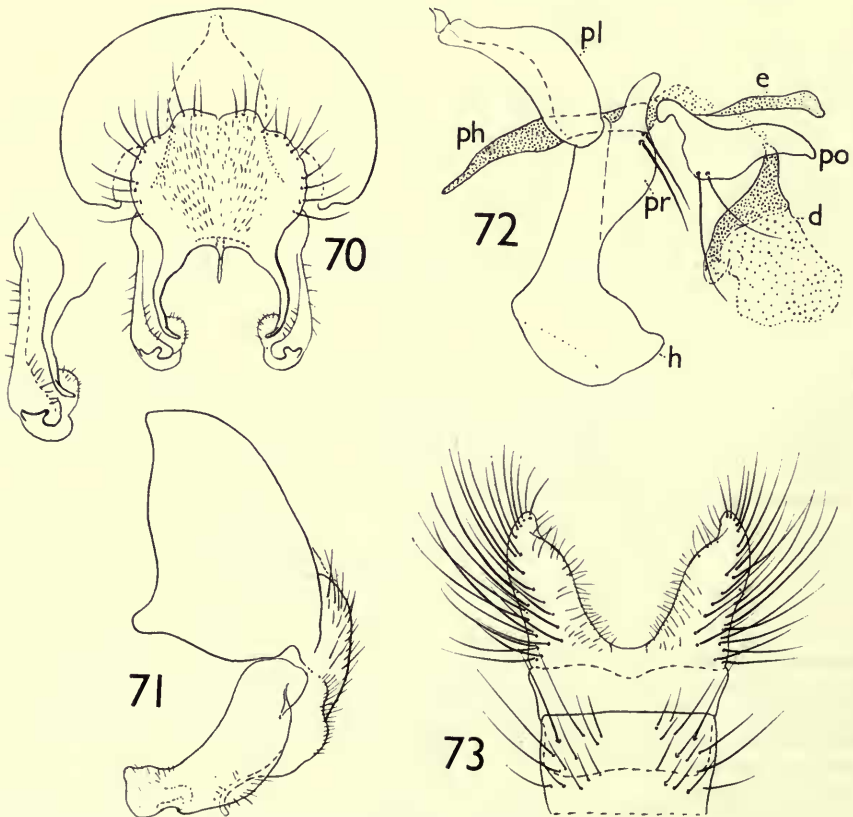
Frons in male wide, at least 0.37 times head-width (*moriens*) to 0.47 (*pamirensis*) ; one pair of strong cruciate interfrontal setae present, and frontal setae long and robust ; epistome projecting in front of level of vibrissal setae ; genae wide, from 0.27 times eye-height (*moriens*) to 0.8 (*fumidorsis*) ; arista bare, rather swollen at base ; palpi long and slender ; *pra* seta long ; *stpl* setae 1 + 2 ; 1-2 developed prostigmatal setae ; *acr* setae represented by fine setulae or hairs ; scutellum with fine pale hairs ventrally at apex ; costal spine strong, at least as long as cross-vein *r-m*, sometimes longer ; lower calypter small ; cross-vein *m-m* straight and rather upright ; fore tibia with at least 2 *ad* and 2 *pd* setae (fine in *pamirensis*) ; mid and hind femora with rows of *av* and *pv* setae ; mid tibia with at least 2 *ad* and 2 *pd* setae ; hind tibia with at least 5 *av* setae, and *pv* apical spur absent ; claws and pulvilli small ; abdomen strongly dorsoventrally compressed, rather flat and wide. Male genitalia : hypandrium large and well developed, epandrium large and wide ; cercal plate wide, with the apical corners slightly produced (*pamirensis* and *fumidorsis*) or with long slender processes (*moriens*) ; surstyli incised at apices ; praegonites reduced, with 2 short setae, postgonites simple, swollen at base, with 2 fine setae ; distiphallus simple, mainly membranous, only the basal part sclerotized ; 4th sternite nearly as wide as 5th sternite.

Of the characters which are present in *moriens*, and which might be considered to be of generic importance, but which are not included above, the following should be mentioned. Two anteroventral setae are present on the mid tibia in *moriens*,

and also in *fumidorsis* but are absent in *pamirensis*. The presence or absence of this character in two such obviously monophyletic species as *fumidorsis* and *pamirensis* indicates that it is of little generic importance. The ventral surface of the costa of the wing in *moriens* has a few hairs, especially in the basal part, but they are close to the anteroventral setulae in the apical part, and difficult to see; in *fumidorsis* and *pamirensis* the ventral surface of the costa is virtually bare, although some longer, more erect hairs are discernible very close to the anteroventral setulae. The two species would, however, certainly be normally considered as having the costa bare ventrally. The character of ventral costal hairs is unfortunately not as clear cut as it might at first appear, as numerous different kinds of hairing can be observed, and the effect may be sometimes due to a displacement of anterior hairs, rather than the presence of extra true ventral hairs.

*A. moriens* has a developed upper anterior mesopleural setula, which is absent in the other two species.

Although it is not possible at the present time to indicate which are the apomorphic characters by which *Pseudomyopina* might differ from other genera, the following



FIGS. 70-73. *Pseudomyopina moriens* (Zett.) (syntype): 70, ♂ hypopygium, caudal view; 71, hypopygium, profile; 72, aedeagus; 73, 4th and 5th sternite.

may be useful in separating the species from closely or superficially related genera : *Myopina* has a developed praegonite and a very complicated sclerotized distiphallus, and the 6th abdominal tergite bears numerous setulae ; in addition the overall structure of the abdomen is quite different, and the epistome is not projecting. *Fucellia* R.D. has no setae on the postgonite, the distiphallus is more sclerotized, and the costa ventrally has fine hairs basally, but rather widely spaced strong spicules in apical half. *Monochrotogaster* Ringdahl, according to Hennig (1966), has a slender bifurcate cercal plate, no setae on the postgonite, the distiphallus is short and almost fully membranous ; in addition the pulvilli are very large.

KEY TO OLD WORLD SPECIES OF *PSEUDOMYOPINA* (MALES)

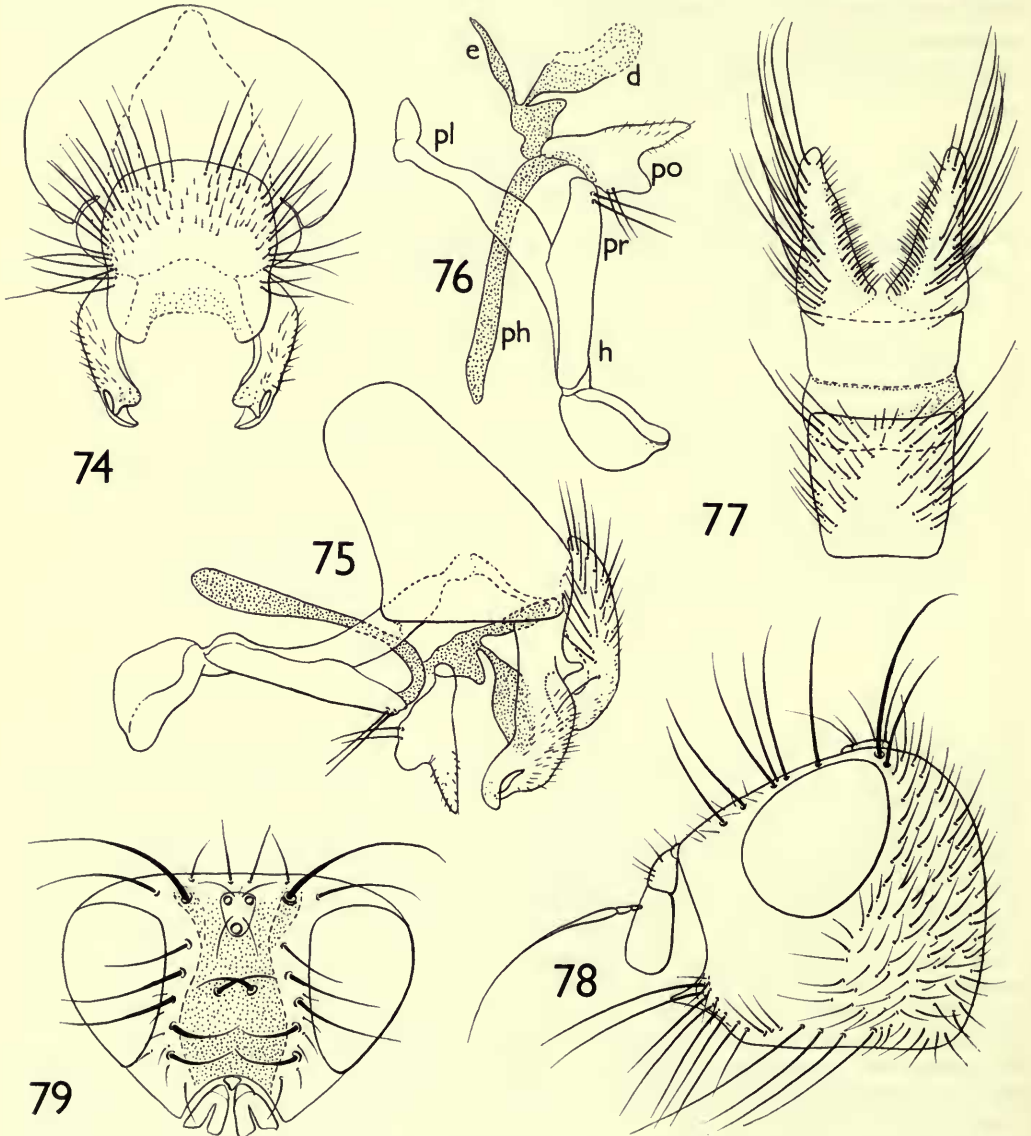
- 1 Genae narrower, at most 0.3 times height of eye ; costa of wing with some fine hairs on ventral surface, more distinct in basal half ; a developed upper anterior mesopleural setula present ; thorax with yellowish or brownish pollen, mesopleuron darker brownish . . . . . *moriens* (Zett.)
- Genae wider, at least 0.6 times height of eye ; costa of wing bare on ventral surface ; no developed upper anterior mesopleural setula ; thorax with greyish green or greyish pollen, at most some brownish pollen on mesonotum . . . . . 2
- 2 *pra* seta as long as posterior notopleural seta ; costal spine at least 1.5 times length of cross-vein *r-m* ; anterior costal setulae about twice as long as diameter of costa ; mesonotum with extensive lateral brownish pollen, contrasting with a greyish pollinose median vitta ; mid tibia with 2 *av* setae, hind tibia with about 5 strong *av* setae . . . . . (Nepal) *fumidorsis* sp. n.
- *pra* seta slightly shorter than posterior notopleural seta ; costal spine only as long as length of *r-m* ; anterior costal setulae only about as long as diameter of costa ; mesonotum with only greyish green or bluish pollen ; mid tibia without *av* setae, hind tibia with only 3 strong *av* setae . . . . . (Tadzhikistan) *pamirensis* sp. n.

*Pseudomyopina fumidorsis* sp. n.

(Text-figs. 74–79)

♂ *Head* : black in ground colour, with greenish grey and brownish pollen. Eyes widely separated, frons wide, at vertex 0.44 times head-width. Interfrontalia matt black, with brownish pollen when viewed from in front, constricted in front of anterior ocellus, where it is about twice as wide as a parafrontal at this level, widening out in anterior half of frons ; one pair of strong cruciate interfrontal setae, and numerous short hairs across anterior part of interfrontalia. Parafrontal greyish pollinose, with a trace of brownish pollen towards inner margin ; 5–6 strong frontal setae, and some short fine hairs outside their bases. Parafacial at lunule wide, about 1.3 times width of third antennal segment, width maintained ventrally, gena very wide (hence eyes small) about 0.8 times height of an eye. Epistome strongly projecting, the margin in profile reaches beyond level of vibrissal setae ; about 6 other strong setae below vibrissae on anterior lateral margins of mouth opening, which is obliquely cut off when viewed in profile. Antennae black, third segment hardly twice as long as second, arista bare, basal segments rather long, third segment rather distinctly swollen at base. Mentum of haustellum black with greyish pollen, matt, length difficult to determine in holotype, but probably rather long ; palpi black, long and slender. Two pairs of vertical setae, inner pair very robust and long, outer pair equal in length to frontal setae. Occiput swollen and rounded, greyish green pollinose, with numerous short, stiff black setulae on upper part, those on lower part more hair-like. *Thorax* : black in ground colour, with greyish green pollen, and patches of brownish pollen, especially on dorsum. Mesonotum, viewed from in front, with a paler greyish median

vitta presuturally, which is about half as wide as distance between *prst dc* setae; the rest of mesonotum, apart from humeri, brownish pollinose. Viewed from the side this brownish pollen tends to form a darker vitta along the lines of the *dc* setae, but the area immediately in front of scutellum, and this itself, clear greenish or bluish grey pollinose. *acr* setae represented by irregularly bi- to triserial fine erect hairs, indistinguishable from accessory mesonotal hairs, only slightly longer, but not stronger in front of scutellum; *prst acr* hairs separated by a bare space, equal to width of *acr* rows, from *dc* setae. *pra* seta long and strong, equal to posterior



FIGS. 74-79. *Pseudomyopina fumidorsis* sp. n. (holotype): 74, ♂ hypopygium, caudal view; 75, hypopygium, profile; 76, aedeagus; 77, 4th and 5th sternite; 78, ♂ head, profile; 79, ♂ head, dorsal view.



*npl* seta, situated much closer to suture than to *sa* seta. Two long posthumeral setae. Notopleuron bare apart from the two strong seta. Two unequal propleural setae, one strong and one finer prostigmatal seta, with about 7-9 fine associated hairs. No developed upper anterior mesopleural setula. *stpl* setae 1 + 2, lower posterior seta about two-thirds length of upper posterior seta. Scutellum concolorous with posterior part of mesonotum, one pair of strong basal lateral setae, one pair of strong apicals, and one pair of fine preapicals, which are about half as long as, and as distant from each other as the apicals; lateral setulose hairs uniserial, about 3-4 apical hairs which are rather long; ventral surface of scutellum with a few fine pale hairs at apex. *Wings*: membrane very faintly greyish tinged, base of wing distinctly yellowish, veins brownish. Anterior costal setulae rather long, those between apices of subcostal vein and  $R_1$  about 1.5-1.75 times diameter of costa. Ventral surface of costa virtually bare, though there is a row of fine, semi-erect hairs very close to the anteroventral row of setulae; these are probably not true ventral hairs. Costal spine long, about 1.6 times length of *r-m*. Cross-vein *m-m* straight, and rather upright. Last section of  $M_{1+2}$  1.28 times length of preceding section. Calyptrae yellowish, with yellow fringe, concolorous with wing base; lower calypter narrow, at widest part not wider than diameter of hind tibia. Halteres yellow. *Legs*: black, with thin greyish pollen. Fore tibia with 2 *ad*, 3 *pd* and one *pv* seta; two strong preapical setae present. Mid femur with almost complete *av* and *pv* rows, the setae of the *pv* row longer, especially at base, and mixed with fine setulose hairs. Mid tibia with 2 *av*, 3 *ad* (basal one shorter), 3-4 *pd*, and about 3 *pv* setae, all rather strong. Hind femur with complete rows of *av* and *pv* setae mixed with setulose hairs. Hind tibia with about 7 *ad*, 6-7 *pd*, 5-6 *av* setae, all strong, and about 7-8 finer unequal *pv* setulae; *pv* apical spur absent. Claws and pulvilli rather small. *Abdomen*: black in ground colour, with dense greyish pollinosity, slightly bluish or greenish tinged. Dorsoventrally compressed, postabdomen somewhat swollen; viewed from above elongate-oval, widest at  $T_3$  which is 3 times as wide as median length of tergite; ratio of total length of abdomen to greatest width is 8:5. Viewed from behind with a diffused median vitta (about as wide as diameter of hind femur) on  $T_3$  and  $T_4$  and basal part of  $T_5$ , hardly distinct on  $T_1+2$ .  $T_6$  apparently without any hairs.  $T_7+8$  pollinose.

Body-length 6.5 mm., wing-length 7 mm.

♀ unknown.

Holotype ♂. NEPAL: Umgebung der Grünen Hütte der Hilary-Expedition 21.v.1961 (*H. Janetschek*) [in Deutsches Entomologisches Institut, Berlin].

### *Pseudomyopina pamirensis* sp. n.

(Text-figs. 80-83)

♂. Very similar in general appearance to the preceding species, so that a detailed description is unnecessary. The main differences are given in the table below.

<i>fumidorsis</i>	<i>pamirensis</i>
Costal spine longer, about 1.5 times length of <i>r-m</i> .	Costal spine shorter, not longer than length of <i>r-m</i> .
Anterior costal setulae longer than diameter of costa.	Anterior costal setulae not longer than diameter of costa.
Mesonotum with extensive brown pollen.	Mesonotum without brown pollen, except around base of prescutellar <i>dc</i> seta.
<i>pra</i> seta as long as <i>post npl</i> .	<i>pra</i> seta slightly shorter than <i>post npl</i> .
Fore tibia with 2 strong <i>ad</i> and 3 strong <i>pd</i> setae.	Fore tibia with 1-2 <i>ad</i> , and 1-2 <i>pd</i> setae, rather fine.

Hind tibia with 5 strong *av* setae.

Hind tibia with 3 strong and 2 fine *av* setae.

Mid tibia with 2 *av* setae.

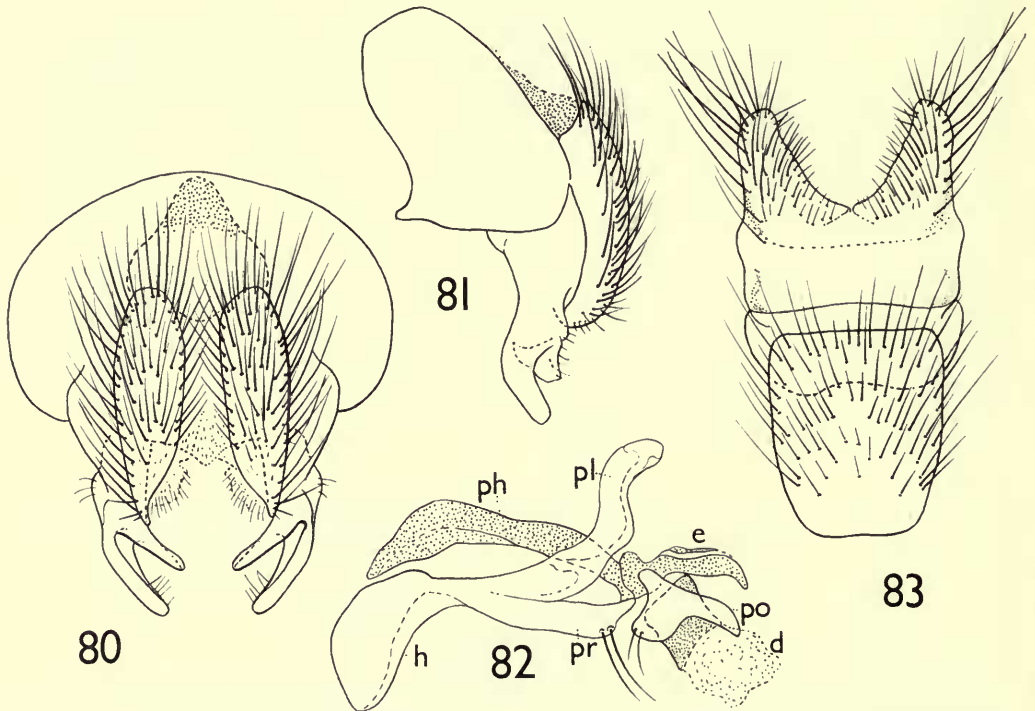
Mid tibia without *av* setae.

5-6 pairs of frontal setae.

7-8 pairs of frontal setae.

The male genitalia has the cercal plate divided into two pads, which are more setulose than in *fumidorsis*, and the surstyli are more deeply cleft at their apices. The postgonite is less produced below in *pamirensis* than in *fumidorsis*, and the lobes of the fifth sternite are much shorter. The sixth abdominal tergite in the holotype of *pamirensis* has some fine setulose hairs.

♀ unknown.



FIGS. 80-83. *Pseudomyopina pamirensis* sp. n. (paratype): 80, ♂ hypopygium, caudal view; 81, hypopygium, profile; 83, 4th and 5th sternite.

Holotype ♂. TADZHIKISTAN: E. Pamir, 12 km. from Tschetchseky, Tzirk Zor, 4,800 m., 25. vii. 1962 (*Sychevskaya*).

Paratype. 1 ♂, same data as holotype. [Both in Staatliches Museum für Naturkunde, Stuttgart].

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